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FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

DEPARTMENT OF ECONOMICS

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The Relationship between Mental Health and Socioeconomic Status: Depressive Symptoms among Adults in South Africa

By

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A research assignment submitted in fulfillment of the requirement for the degree of Masters of Commerce in the Department of Economics, University of the Western Cape

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November 2016

DECLARATION

I declare that "The Relationship between Mental Health and Socioeconomic Status: Depressive Symptoms among Adults in South Africa" is my own work, that it has not been submitted for any degree or examination in any university, and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

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Signature: K.Mungai

Date: 29 November 2016

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Abstract

Mental disorders are estimated to be experienced by one out of three South Africans in their lifetime. (Stein, Seedat, Herman, Moomal, Heeringa, Kessler & Williams, 2009:3). Empirical studies indicate, that people, who are poor, live in impoverished neighbourhoods, have lower education levels and are subsequently more likely to have mental disorders. This study focuses on depression. Empirical studies point to depression being negatively correlated with socioeconomic determinants, but is this the case in South Africa?

From a theoretical standpoint the study considers how socio-structural aspects such as poverty and educational outcomes (amongst other socioeconomic variables) can lead to the prevalence and persistence of depressive symptoms. The main question the study aimed to investigate was whether depression was negatively related to socioeconomic status, and through which pathways does socioeconomic status affect depression.

This study used panel data from the National Income Dynamics Study (NIDS) to examine the socioeconomic determinants of depressive symptoms. Waves 1 (2008) and 4 (2014/2015) of the NIDS data were used to answer the research question. Depressive symptoms were assessed using the 10-item version of the Centre for Epidemiological Studies Depression Scale (CES-D). The scale measured depressive symptomatology. The cut off that was used was a score of 10 or higher, which indicated the occurrence of significant depressive symptoms. In order to assess which socioeconomic determinants increase the probability of experiencing significant depressive symptoms, a probit model was used to make this investigation.

The results of the study indicate that, despite the recent increase in depression in 2012 and 2014/2015, the overall prevalence of depression in South Africa has declined significantly between 2008 and 2014/2015. Socioeconomic status was found to be negatively associated with depression. In particular, a low income and occupational status were associated with a significantly greater probability of being depressed. Disparities in depression outcomes followed the disparities in socioeconomic status. Hence the study found that women and Africans were particularly vulnerable to depression as they were socioeconomically disadvantaged.

Keywords: Mental Health, Depression, Depressive Symptoms, Mental Disorders, Socioeconomic Status, South Africa

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Chapter 1 : Introduction

1.1 Background

Mental health is a critical issue that often affects social wellbeing but does not receive enough attention globally, especially in developing countries like South Africa. Findings by Lehohla (2011:83) from the General Household Survey (GHS) indicate that 95 000 out of 4 822 412 people (1.97%), who were ill before taking the survey, suffered from some form of mental illness in South Africa. Other studies, such as those conducted by the South African Stress and Health Study (SASH) indicate that between the periods 2002-2004, the lifetime prevalence of mental disorders in South Africa was 30.3%. This means that roughly a third of South Africans experienced some form of mental disorder at some point in their lives (Williams, Seedat, Herman, Moomal, Heeringa, Kessler & Stein, 2009:3).

Good mental health allows human beings to be functioning members of society. To underscore this point, the US Surgeons' General Report (2003:21) by the US Department of Health and Human Services, states that, "positive mental health results in productive activities, fulfilling relationships with others and the ability to adapt to change, and cope with adversity." Mental disorders impair an individual's functioning through its physical and psychological effects. Part of the Department of Health's Strategic Plan for the Prevention and Control of Non-Communicable Diseases 2013-17 (2013) for South Africa is to reduce morbidity resulting from mental disorders. The Department of Health also plans to increase the number of people screened and treated for mental illnesses by 30% by 2030 (Department of Health, 2013:57). This is important because the treatment gap according to the SASH study was 75% in South Africa (Bateman, 2014:1). Legislation on mental health care in South Africa has been referred to as progressive (Burns, 2011:100). The implementation of the legislation has integrated mental health care into general health care through use of the primary care model (Department of Health, 2013:9). This has greatly been congruent with the human rights framework, in that South Africa has moved away from institutionalisation and the centralisation of mental health care (Petersen & Lund, 2011:1). The plans of government thus indicate that mental illnesses are serious diseases that require government intervention.

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Poverty and inequality are also associated with mental health problems. South Africa's historical past of colonialism, apartheid and violence, which led to the marginalisation of people of colour, had a detrimental effect on the mental well-being of people (Tomita, Labys & Burns, 2015:2: Williams et al., 2009:2). This greatly contributed to the prevalence of depression in the country. The effects of the past, however, still persist today. Poor people remain in situations of greater vulnerability to traumatic events, for example crime, sickness, hunger, homelessness, which are all aspects associated with people who are mentally ill. This point is further corroborated by Jack, Wagner, Peterson, Thom, Newton, Stein, Khan and Tollman (2014:3) who put forward that data from the SASH study suggests that the high occurrence of mental disorders in South Africa post-apartheid may have been caused by exposure to trauma and stress during the apartheid era.

Even post-apartheid, neighbourhood patterns of settlement, which were enforced by apartheid policies, still persist. The poor still live in poor environments and raise their children in the very same environments. Interventions by government in these communities have affected the environment in which community members live. Consequently, the overall mental well-being of people living in the communities has changed. The resulting impact of the interventions on mental health is, however, greatly under-studied.

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Studies have, however, established that the relationship between poverty and mental health is bi-directional. The Department of Health (2013:14) reports that people, who are poor, are more vulnerable to mental disorders because they lack social support, and are more prone to conditions of violence and have lower levels of physical health. At the same time, people who are mentally ill are also more vulnerable to poverty because they are more likely to have lower levels of productivity, lower average earnings, and greater health expenses as a result of their illness (Lund, Meyer, Flisher, Williams & Stein, 2013:6).

At a microeconomic level mental disorders lead to a reduction in household expenditure and an increase in the risk of households falling below the poverty line (Department of Health, 2013). In addition, mentally ill parents may also affect the socioeconomic status of their children as the mental illness may affect the ability of the parent to participate in their child's upbringing. Interestingly, high parental income does not mean that children will be immune to mental disorders. Currie and Stabile (2007) researched school children from the USA and Canada, and report that higher income did not protect children against the negative impact of mental health

conditions. Therefore, children from higher income groups were just as vulnerable to mental disorders as children from lower income groups within the same school. At a microeconomic level, it is also important to consider changes in the family structure as a result of mental disorders. For example, parents who are bed-ridden because of their mental illness may shift the responsibility of being a main decision-maker on to another household member. The overall dynamics of families are therefore also affected by mental disorders with respect to roles and responsibilities.

On a macroeconomic level, mental disorders have social and economic costs. Mental disorders are associated with drug and alcohol abuse. Society becomes negatively impacted by these maladies, which lead to crime and public disturbances affecting many people in South Africa. Mental disorders also decrease productivity and total income. Furthermore, mental disorders negatively impact human capital, which on a macroeconomic level reduces productivity. Studies by Lund et al. (2013:1) estimate that the total annual cost to South Africans, who have mental illnesses in terms of lost income, is $3.6 billion. Moreover it cost South Africa 2.2% of its Gross Domestic Product in 2002 (Bateman, 2014:1). Lund et al. (2013:2) also consider the capabilities approach of Amartya Sen, since mental illnesses affect an individual's ability to convert income into a capability. This is because mental disorders may affect an individual's functioning, which includes being healthy or literate. It is therefore evident that there is an economic and social cost associated with mental illnesses. This is one of the many reasons why governments would be required to intervene and mitigate the economic burden related to mental disorders.

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Connections between socioeconomic status and mental health have been found in the literature. Socioeconomic status may be conceptualised as the social class standing of an individual or group of people (American Psychology Association, n.d.). The concept transcends purely material wealth and considers other measures that influence economic and social positions. The three common measures of socioeconomic status are; income, occupation, and education. Measures of socioeconomic status were found to be important in explaining observed health disparities in the United States (Halverson & Bischak, 2008). Studies by Lorant, Deliege and Eaton (2003) have shown that the prevalence and incidence of depression among people with lower socioeconomic positions is higher. Consequently, people who belong to lower socioeconomic groups require economic interventions as well as mental health interventions in order to make progress in

reducing the two entangled problems (Lund, De Silva, Plagerson, Cooper, Chisholm, Das, Knapp & Patel, 2012:3).

1.2 Problem Statement

The Mental Health and Poverty Project (MHaPP) (2008) evaluated mental health in Ghana, South Africa, Uganda and Zambia between the periods 2005-2010. MHaPP reported that as a percentage of GDP, SA spent relatively more on health compared to other countries in the study. South Africa also allocated a greater portion of its health budget to mental health than the other countries even though the portion spent on mental health was only 2.7%. Studies by Semrau, Evans-Lacko, Alem, Ayuso-Mateos,Chisholm, Gureje, Hanlon, Jordans, Kigozi, Lempp, Lund, Petersen, Shidhaye and Thornicroft (2015:3), estimate that South Africa spends 4.5% of its health budget on mental health. Bateman (2014:1) states that the current expenditure on mental health care is inadequate. This will make reducing the treatment gap a significant challenge. Marais and Petersen (2015:19) find that funding for mental health care in South Africa is inadequate compared to the resource needs that are faced when providing mental health care. The resource constraints faced are in financing, infrastructure and human resources. Even if workers are trained, human resource constraints are further made worse by the financing constraints, which restrict the hiring of new workers who are desperately needed. Consequently, a lack of financial and human capital resources in the mental health sector worsened some of the mental health problems encountered in South Africa (Burns, 2011: 100; Marais & Petersen, 2015:9).

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From a human rights perspective mental health policy in South Africa has not been as effective as it could be. In 2004, The Mental Health Act 2002 (MHCA) was implemented. Burns (2011:100) contests that after implementation, little was done by government to fund and champion the progressive legislation. Furthermore, although the right to health is a basic human right, many of those who are affected by mental disorders still remain untreated. Using findings from the SASH study, Bateman (2014:1) reports that only 25% of South Africans with mental disorders are receiving treatment, which leaves three quarters of the mentally ill a danger to themselves and others because they are not on treatment. This is a concern because more than half of people with mental illnesses in South Africa were classified as having either moderate or severe mental disorders (Stein et al., 2009:3). Issues of access and awareness are critical, especially amongst the

poor who have income, educational and distance barriers that reduce the likelihood of prevention and treatment.

There are international studies that have investigated the interactions between an individual's socioeconomic status, poverty and mental health status and but only a few studies have been done in South Africa on this critical issue. Furthermore, the studies that do assess the link between socioeconomic variables and depression fail to include intermediate pathways that link directly to depression. For example, Folb, Lund, Fairall, Timmerman, Levitt, Steyn, & Bachmann (2015) and Hamad, Fernald, Karlan & Zinman (2008:2). Part of the reason could be due to the lack of sources of data that asked a host of questions regarding mental illnesses and the socioeconomic background of people in South Africa. The data sources that are available mainly ask for an individual to self-report their mental well-being. Although this may present questions of validity, the responses may still be useful in linking symptoms associated with certain mental illness to the socioeconomic characteristics of individuals.

Studies that have assessed the prevalence of mental disorders have mainly considered the disease from an epidemiological point of view, without considering the economic and social context related to mental disorders in South Africa. This study seeks to approach mental disorders in a different manner to epidemiological studies. Mental disorders can be linked to biological, environmental as well as socioeconomic conditions (WHO, 2016). This study highlights the importance of determining which socioeconomic characteristics are most strongly associated to an individual's mental status. Not enough studies in South Africa have paid attention to the socioeconomic determinants in South Africa that influence the mental state of individuals. The study will therefore seek to fill this research gap by reviewing some of the socioeconomic and broader social aspects related to depression in South Africa.

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1.3 Research Question

Building on the problem statement, the research questions is as follows: which economic and social determinants of health significantly contribute to the depressive symptomatology experienced by adults in South Africa?

1.4 Objectives

Following from the research question, the specific objectives of the research are:

- To review trends on the prevalence and distribution of depression in South Africa.
- To investigate the socioeconomic profile of adults who were chronically depressed.
- To investigate the impact of the structural and intermediate determinants of health on the likelihood of being depressed.

1.5 Relevance of the Research

Lopez, Mathers, Ezzati, Jamison, & Murray (1996) in the Global Burden of Disease project ranked depression fourth in terms of its global burden and furthermore forecast depression to rise to second in ranking by the year 2020. In the South African context mental disorders are a problem, with depression being more common, relative to the other mental disorders. The SASH study found that major depression was tied with agoraphobia as the second most prevalent mental disorder in South Africa (Stein et al., 2009:3).

Depression affects people in multiple ways, such as: an individual's productivity at work by disrupting their concentration levels, physical effects on an individual's body and giving rise to suicidal thoughts (South African Depression and Anxiety Group (SADAG), n.d). Government has to make both mental health interventions as well as economic interventions in order to assist those affected (Lund et al., 2012:3). In this regard, an investigation into the relationship between depression and socioeconomic status would be useful to establish whether this relationship holds and which socioeconomic aspects are common among people with depression. In addition to socioeconomic status, the study considers the broader social determinants of depression as per the WHO-CDSH (Commission on the Social Determinants of Health) framework. These determinants have not been used to assess depression at a national level using panel data. If the social determinants of health do in fact play a role in determining depression, as found in a study on rural China by Liang, Gong, Wen, Guan, Li, Yin and Wang (2012), it will be useful to explore whether this is indeed the case in South Africa. In addition, an assessment of the intermediate pathways through which the social determinants (structural) affect depression will be useful in providing entry points for policymakers. The study will therefore contribute to the existing literature and fulfill this research gap by not only including socioeconomic status but the broader social and intermediate determinants of depression in South Africa.

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1.6 Thesis Outline

The study is composed of seven chapters. Chapter One introduces the study, provides background information on the topic and presents the research question that the study aims to answer. Chapter Two will delve into the theoretical and cross-cutting empirical literature on the topic. Chapter Three will specify the theoretical and empirical models used in the study to make estimations and draw conclusions. Chapter Four provides the results of the study on the trends on the prevalence and distribution of depression in South Africa. Chapter Five will presents an assessment of the socioeconomic profile of chronically depressed adults. Chapter Six will deliver an analysis of the structural and intermediate determinants of depression. Chapter Seven will summarise the main findings of the study and conclude with some policy recommendations.

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Chapter 2 : Literature Review

2.1 Introduction

South Africa faces a host of health issues. Communicable and non-communicable diseases place a burden on the economy. Non-communicable diseases are chronic diseases that are not infectious, such as stroke, heart disease, diabetes, asthma, cancer, and depression. Communicable diseases are diseases that are infectious, and these include: HIV/AIDS and Tuberculosis. According to the Department of Health (2013:61), non-communicable diseases are the leading cause of death internationally. The disease burden of non-communicable diseases has been increasing and is expected to continue to increase over the years to come. Non-communicable diseases are expected to rise and account for five times as many deaths in low-middle income countries by 2030, according to Hofman (2014:1). Marangu, Sands, Rolley, Ndetei and Mansouri (2014:1) also state that mental disorders are expected to rise in low and middle-income countries due to the epidemiological transition occurring in these countries. The rise in non-communicable diseases includes disease such as diabetes, cardiac disease and mental disorders.

This chapter will review the existing literature on mental health and socioeconomic status. Firstly, we will have a country specific contextualisation of the discussion on mental health and socioeconomic status. Theoretical approaches will be discussed next. This chapter will further review some of the empirical work done internationally and locally, with particular attention paid to depression. Attention will also be paid to the supply-side which is the mental health system in South Africa. Lastly, the chapter will conclude by summarising the literature on mental health and socioeconomic status, as well as establishing the theoretical approach that will be used in this study.

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2.1.1 South Africa's historical context

The importance of mentioning the South African historical context is due to the effect of the apartheid regime on socioeconomic determinants of mental health as well as social cohesion among communities in South Africa. According to Seedat, Van Niekerk, Jewkes, Suffla and Ratele (2009), as cited in Tomita et al. (2015), violence related injury is one of South Africa's highest contributors to mortality and lost disability-adjusted life years (DALYs). Burns (2015) links this to the historical violence in South Africa, which still remains an issue today. Violence and

vulnerability to crime have a negative psychological impact on communities. People living in such communities carry the psychological stresses and fears for prolonged periods of time. Lynch and Cicchetti (1998) and Overstreet (2000) as cited in Tomita et al. (2015:6) state that violent neighbourhood backgrounds are associated with feelings of helplessness and hopelessness, which add to depression. Children who grow up in these environments may fall into depression or even succumb to the pressure around them to abuse drugs or alcohol. Corrigall, Ward, Stinson, Struthers, Frantz and Lund (2007:199) argue that people living in neighbourhoods with high crime and low social cohesion levels are likely to be mentally affected by their environment. The problems that arise as a result of the social disorder in these communities not only affects adults and children separately but in fact makes parenting increasingly challenging and subsequently increases the susceptibility of the children to mental health problems. This suggests that the psychosocial stressors that are prevalent in the disadvantaged neighborhoods mentioned above have profound impacts on mental health in South Africa. Social and economic resources, which exist in affluent neighborhoods, are needed in less affluent neighbourhoods to protect against the impact neighbourhood psychological stressors have on communities.

2.2 Theoretical Literature

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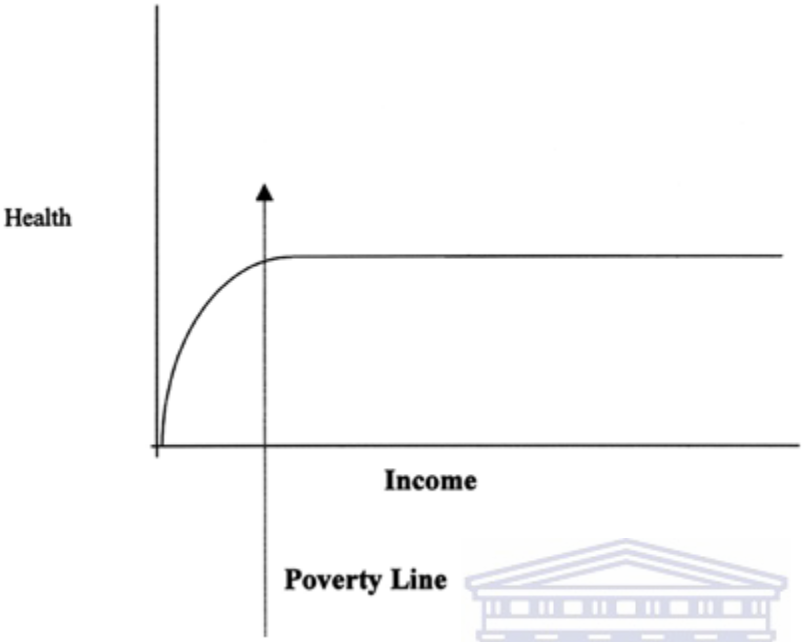
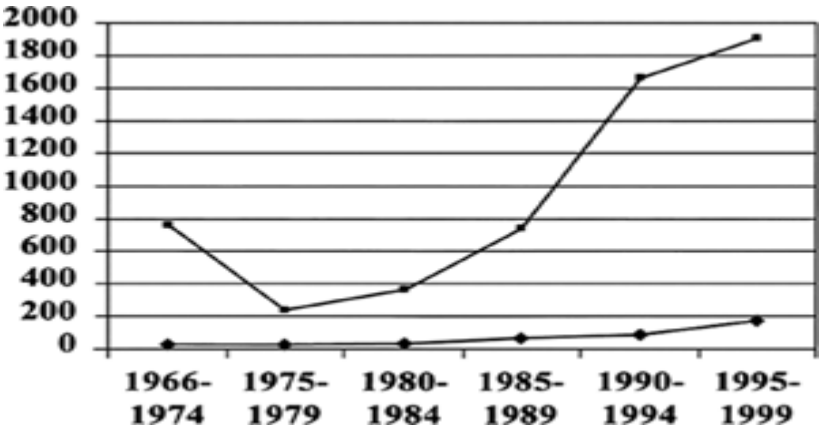
Adler and Ostrove (1999) published a seminal article that discusses different approaches used to assess the relationship between socioeconomic status and diseases. The approaches include: the poverty approach, the gradient approach which considers populations and causal direction, and lastly the mechanisms approach. The poverty approach was used a great deal pre-1985. This is seen in figure 2-2 below. The line at the bottom indicates the trend in publications on 'socioeconomic status and health' while the line above showing the trend in publications on 'poverty and health' in the MEDLINE database. The approach used income poverty as its measure of poverty and concluded that increases in the income of people living below the poverty line improved health outcomes. A strong assumption of this approach was that the health of an individual above the poverty line would not be significantly improved if their income increased (Adler & Ostrove, 1999:2). This is seen in Figure 2-1 below.

Figure 2-1: Threshold model of poverty



Source: Adler & Ostrove (1999:5)

Figure 2-2: Trends in articles published on MEDLINE on 'Socioeconomic status' and 'health vs Poverty and health'.



Source: Adler & Ostrove (1999:5)

This approach was followed by the gradient approach which considers the socioeconomic gradient for diseases. Different diseases were found to have varying relationship directions and strengths with socioeconomic status (Adler & Ostrove, 1999:5). Some diseases ran counter gradient meaning that people from higher socioeconomic classes are more prone to have those diseases. The last approach discussed by Adler and Ostrove (1999) is the mechanisms approach which gained more acceptance around the year 1995 and beyond, according to Adler and Ostrove's (1999) assessment of trends in publications. This approach is particularly useful in assessing the pathways through which social determinants affect populations. The mechanisms approach will be discussed in great detail with reference made to different nuances of the approach, such as the conceptual model of risk factors for disease as well as the WHO's CSDH (Commission on the Social Determinants of Health).

Early studies throughout the USA on the relationship between social class and mental disorders found that the relationship follows a social gradient (Perry, 1996:3). That is, in higher social groups, prevalence rates of mental disorders were much lower relative to lower social groups. In more contemporary studies such as the community study by the National Institute of Mental Health (NIMH), six-month prevalence rates for the lowest socioeconomic group was found to be 2.9 times higher than that of the highest socioeconomic group (Perry, 1996:5). The studies indicate that for major depression, alcohol abuse and schizophrenia, the risks were 1.8, 3.6 and 7.9 times higher for the lowest socioeconomic group relative to the highest (Holzer et al., 1986 as cited in Perry, 1996:5).

Diseases, however, are not always evenly distributed among the population (Adler & Ostrove, 1999:6). The populations approach investigates whether the socioeconomic gradient for diseases is the same for various demographic profiles; for example, females compared to males or blacks compared to whites and so forth. Since diseases are not distributed evenly through the populations, this approach can be used to investigate the impact of social and economic inequalities on the distribution of diseases.

2.2.1 Social Causation and Social Drift/Selection

Socioeconomic status is negatively related to poor health. The direction of causality is however a contentious issue. Socioeconomic status may influence the health status of an individual, which is known as social causation (more compelling). For example, an uneducated poor person may have

less access to health facilities or not be able to afford medicine, which can lead to poorer physical and mental health outcomes relative to an individual with a high socioeconomic standing. On the other hand, the health status of an individual contributes to the individual's socioeconomic status which is known as social drift/selection (more likely for diseases with an early onset). Poor health outcomes according to social drift theory can result in an individual transitioning to a lower socioeconomic class.

With regard to mental health, social drift theory suggests that mental illnesses are not randomly distributed among the population, but instead they tend to be more prevalent in economically marginalised groups. Moreover, mental disorders increase the risk of the poor remaining in poverty, through higher health expenditures, as well as greater discrimination due to the stigma attached to their illness (Lund et al., 2012:2). Social causation theory suggests that conditions of poverty increase the risk of mental disorders through social exclusion, violence, trauma and decreased social capital (Lund et al., 2012:2). This means that poverty alleviation interventions can lead to improvements in national mental health. For example, conditional cash transfers may assist the poor in affording mental healthcare and may reduce their financial barriers to treatment. On the other hand, better mental health at a national level will lead to better economic outcomes through reducing productivity loss due to mental disorders. In addition, better mental health means a reduction in the externalities associated with mental disorders that spill over into society.

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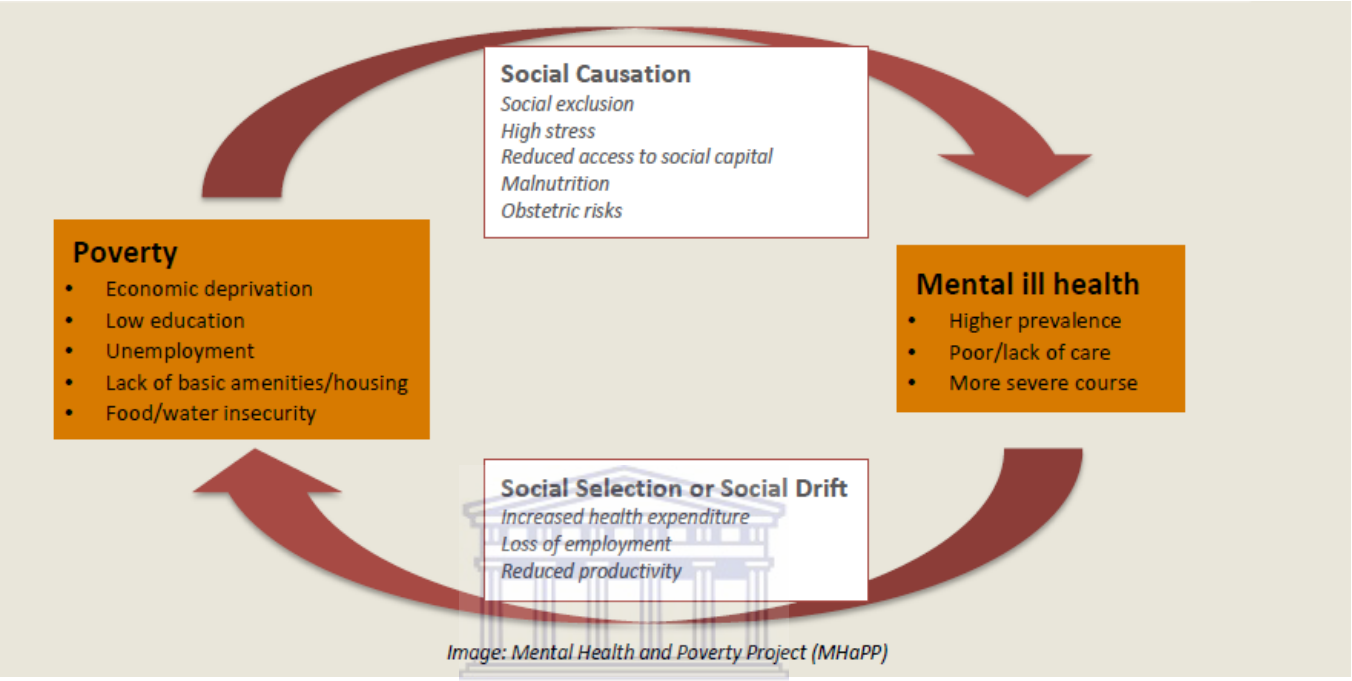
With regard to depression in particular, studies by Lorant et al. (2003) as well as Folb et al. (2015), also point to the bi-directional nature of the relationship between depression and socioeconomic variables. The Lorant et al. (2003) study points overall to the fact that socioeconomic status is inversely related to depression. Although the relationship is bi-directional, most of the results suggest that the direction of the relationship between depression and socioeconomic status supports the social causation theory. Despite this conclusion, both theories may prove to be plausible at different points in an individual's life (Lorant et al., 2003:8).

Figure 2-3 below shows a bi-directional relationship which is evident between mental health and poverty. This has implications for the relationship between mental health and socioeconomic status. Poverty is not merely financial, but includes multiple deprivation that is experienced by poor people, that subsequently impacts their education, income and occupational status. The significance of this is that if this relationship is not recognised before making interventions for the

mentally ill, they may still remain in the vicious cycle. This cycle traps those who are poor in debilitating mental disorders as well as ensnaring the mentally ill in the poverty trap.

Figure 2-3: Vicious Cycle between Poverty and Ill Mental Health



Source: Lund, De Silva, Plagerson, Cooper, Chisholm, Das, Knapp & Patel (2012:2)

The relationship between mental disorders and social class is well documented. People in lower social classes are found to have higher prevalence rates for mental disorders (Perry, 1996:1). However the causal mechanisms and the relationship is still a topic of debate that requires further research (Perry, 1996:2). Two main arguments exist: one for social causation theory and the other for social drift/selection theory. Social drift theory argues that individuals drift into lower social classes as a result of poor mental health. A study on depression in the Eastern Cape noted that depression reduced the socioeconomic status of individuals (Andersson, Schierenbeck, Strumpher, Krantz, Topper, Backman, Ricks & Van Rooyen, 2013:1). This theory, however, neglects to take into consideration the impact poverty has on increasing the vulnerability of individuals to mental disorders. Social causation theory, on the other hand, describes the effect of being economically and socially disadvantaged on increasing psychological stress. Social causation theory, however, has more empirical evidence in its support relative to social drift theory (Perry, 1996:2).

The underpinnings of social drift/selection theory are in Darwin's natural selection theory (Perry, 1996:10). Hence, one would conclude that individuals, who end up in lower social groups are there

because mentally and physically they are not strong enough (Perry, 1996:10). Conversely, those who are mentally and physically superior will in turn end up in higher social groups (Perry, 1996:11). The fact that disadvantaged groups are primarily in lower social groups indicates that more needs to be done to increase educational and job opportunities for them (Perry, 1996:12). Equity in access is not realised. This is largely dismissed by social selection theory. Hence, the individualistic approach, which social selection theory takes, fails to consider systemic injustice and inequality.

Considering this in the South African context, historically legislated racial prejudice led to systemic biases in favour of white South Africans. This lowered access for people of colour. Hence their lower mental health outcomes are not because they are inferior, but because of a system that had an unfair bias. Accordingly, the responsibility and burden is on the individual rather than on systems if selection theory is considered (Perry, 1996:12). If this logic is followed no social justice will take place. It is clear that reform will require an inter-sectoral approach as the burden of reforming a previously biased system cannot rest on the shoulders of one department. Moreover, such collaborations should occur at all three levels of government (national, provincial and district).

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Folb et al. (2015) argue that social causation and selection both have had merit in determining the link between mental disorders and poverty. The social causation approach has, however, been found to have a greater significance in exploring the relationship between poverty and depression (Folb et al., 2015: 2). Mossakowski (2014) also suggests that, although the relationship between socioeconomic status and health is reciprocal, the evidence for social causation theory is however more compelling. In addition, studies indicate that the strength and direction of the relationship varies with each mental illness which needs to be noted when making mental health or economic interventions for the mentally ill or poor.

2.2.2 Life course perspective

The life course perspective is an approach that considers both social and structural exposures on health outcomes of an individual across age cohorts and generations. This perspective recognises that social and structural determinants of health affect individuals at different stages of their development, for example, early childhood, childhood, adolescence and adulthood (WHO, 2010:18). Each cohort is presented with differential opportunities in education and employment

(Hutchison, 2011:11). Ben-Shlomo & Kuh (2002:1) consider the life course approach as the study of the chronic effects of chronic diseases on physical and social risks over each stage of life development. Biological, psychosocial, behavioural aspects and mechanisms are considered as to how they affect people across their various developmental stages.

There are three models that consider the life course approach; namely; the critical period's model, the accumulation of risk model and the pathway model. The critical period's model finds that the exposure of an individual to a risk at a particularly sensitive period of time in their life may have a long lasting effect on the individual's well-being (WHO, 2010:18). From this, policy can be developed based on at-risk age groups as a preventative measure; for example, alcohol abuse campaigns targeted at adolescents. The accumulation of risk model argues that risk factors can accumulate over an individual's life (WHO, 2010:18). Thus, the exposure to certain risk factors may have compounding negative consequences on an individual during their life course.

This model also considers cumulative disadvantage and cumulative advantage. Children who are from wealthy backgrounds have access to the best educational facilities at an early age, which grants them access to the best educational facilities later in life. Subsequently, these individuals end up working in relatively high income jobs and are better able to maintain their health (Hutchison, 2011:31). The pathway model argues that events that occur at early stages in life set an individual on a pathway. That trajectory includes various risk factors that affect the health outcome of an individual at a later stage of development in their life (Gilman & McCormick, 2010: 1). The life course perspective is, however, not without difficulties. Some of the challenges associated with this method include the challenge of making comparisons at an international level (Hutchison, 2011:34), and the isolation of the micro and macro (Hutchison, 2011:35).

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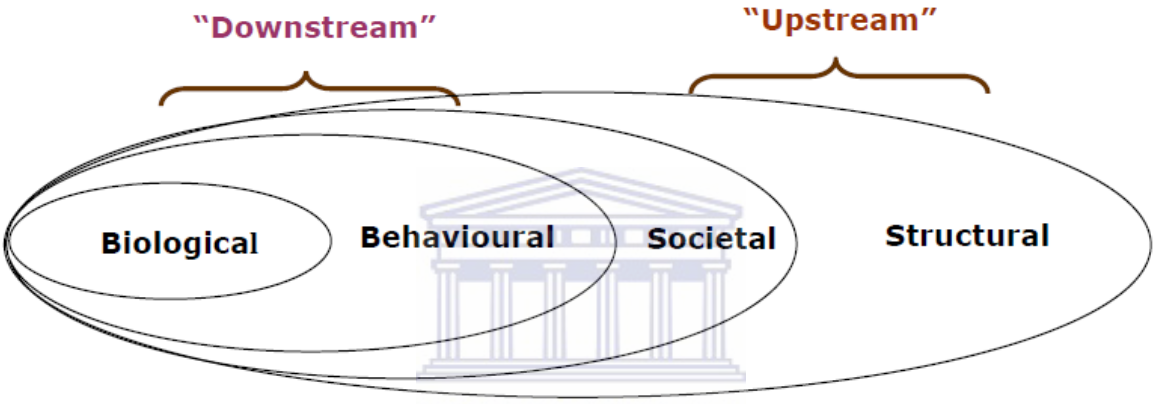
2.2.3 Pathways approach

Adler and Ostrove (1999) suggest that the mechanisms/pathways approach is the more recent approach to assessing the influence of socioeconomic status on health. The pathways by which socioeconomic status influences health include social, psychological, behavioral and biological mechanism/pathways (Adler & Ostrove, 1999:11). Figure 2-4 below is a conceptual model of risk factors for diseases. The model illustrates the different streams that contribute to mental disorders. According to Corrigall, Ward, Stinson, Struthers, Frantz & Lund (2007:7) the upstream factors which are of a societal and structural nature are considered the originating causes of mental

disorders such as poverty. As a consequence of these socio-structural causes, more direct pathways, otherwise known as downstream causes may occur; for example, hunger as a result of poverty can lead to poor physical health and later lead to mental disorders. The socio-structural causes, therefore, do not directly impact mental health. They instead influence the downstream causes. The downstream causes, however, affect the individual's mental health directly. The mechanisms through which factors such as poverty affect the risk of mental disorders can thus be identified by this approach.

Figure 2-4: Conceptual Model of Risk Factors for Disease



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Source: Corrigall, J., Ward, C., Stinson, K., Struthers, P., Frantz, J., Lund, C (2007:6)

Of particular interest to this study is the WHO's CSDH framework (WHO, 2010). When there are varying biological, environmental, and psychological statuses between people, it can be expected that mental health outcomes will also vary between people. In addition, material circumstances and social factors play a role in determining the health and mental health outcomes as well as inequalities in these outcomes. Social determinants of health, therefore play a role in determining health disparities. That is, differences in health status may be attributed to differences in social factors (Liang, Gong, Wen, Guan, Li, Yin & Wang, 2012: 1). Not many studies on health consider the social factors. These social determinants of health are useful in research relating to communicable and non-communicable diseases, as well as mental and physical health. Mental health in particular has to contextually be considered; that is, from a holistic perspective. One example of this would be by not omitting the economic, biological, social, personal and cultural context (Liang et al., 2012: 1). It should be noted that, although some social factors are mentioned

in studies, not enough attention is paid to the social determinants of health (Liang et al., 2012: 1). This differs from simply mentioning social factors in that it considers social disparities and how they are related to health disparities in a society. Hence, the focus is on inequality and how the health statuses of people at lower socioeconomic levels is impacted by their socioeconomic disadvantage (Liang et al., 2012: 1). This phenomenon is one of the focuses of the WHO-CSDH policy (Liang et al., 2012:2).

Disparities in health outcomes come from the patterns of social stratification. That is, the unequal distribution of power and resources among groups in society translate into disparities in health outcomes. Diderichsen & Hallqvist's 1998 early model adapted by Diderichsen, Evans & Whitehead (2001) which indicated the social production of diseases has been instrumental in the formulation of the WHO-CSDH framework. The framework is illustrated in figure 2-3 below which indicates the mechanisms and pathways through which social context influences health. The framework includes a socio-economic and a policy context. This element of the framework notes that these aspects of the social system influence patterns of social stratification and thus on health opportunities of individual (WHO, 2010: 25).

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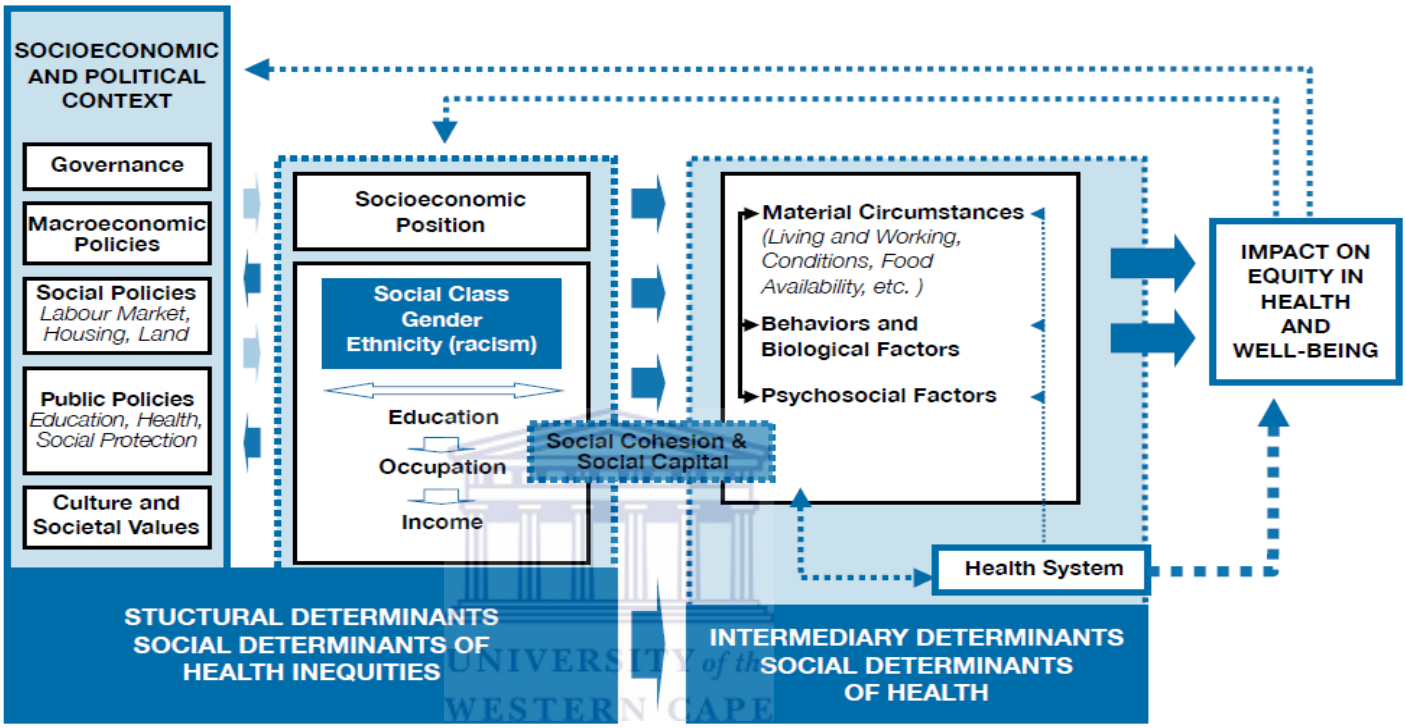
The next element is the socioeconomic position, which includes: education, occupation, income, gender and race. Both the first and second element form part of the structural and social determinants of health inequities. The third element is the intermediary determinant which is also known as a downstream social determinant (WHO, 2010: 28). These include material circumstances, psychosocial factors, behavioural factors, biological factors, social cohesion/social capital and the health system (WHO, 2010:37). Intermediary factors are impacted by the socioeconomic and policy context through the size and availability of resources. Health is stratified at an individual level through pathways linked to different social positions (WHO, 2010: 24). As a result of different social positions, differential vulnerabilities are experienced at an individual level, which led to differential consequences (WHO, 2010:20). Therefore people with higher social positions will have better health outcomes. In addition, social and economic consequences of poor health will not affect them as severely as the poor who may have feedback effects and further develop illnesses as a result of the negative social and economic consequences of the initial illness. The cycle which consists of an aggregation of poor health and poor socioeconomic outcomes severely hurts the disadvantaged (WHO, 2010:20).

The WHO-CSDH framework below therefore, considers both socioeconomic and non-socioeconomic determinants of health. This is particularly useful in investigating depression as depression is influenced by a variety of factors.

Figure 2-5: WHO-Commission on the Social Determinants of Health Framework



Source: World Health Organization. (2010). A conceptual framework for action on the social determinants of health.

According to the WHO (2010:20), the purpose of a detailed SDH framework is to firstly investigate and identify the social determinants of health and inequities in health. The framework also seeks to identify links between the determinants, and understand the pathways through which differential health outcomes occur. Moreover, the framework aims to identify the contributors of inequities, which if addressed, would lead to significant improvements in health outcomes. Subsequently, the policy entry points should be determined based on findings from prior steps in this process. The subsections below will discuss various aspects of the SDH, as seen in the diagram above.

2.2.4 Social and policy context

Individual health outcomes are affected by the socioeconomic and policy context in which people reside. South Africa's redistributive social policies can be referred to as pro-poor. There have been efforts on the part of government to reduce socioeconomic inequality through assisting the vulnerable. An important part of South Africa's social policies is the social assistance system which has become a safety net for the vulnerable. The social safety net comprises multiple conditional cash grants (Jacobs, Ngcobo, Hart & Baipheti, 2010:2). South Africa's social assistance system has grown over the years. StatsSA (2014:20) reports an increase in grant recipients from 10.2 million in 2006 to 14.6 million in 2011 in South Africa. Despite the redistributive system, inequality remains a problem in South Africa. Individual health outcomes in South Africa, as a result, are influenced by this unique social and policy context.

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2.2.5 Non-socioeconomic determinants of depression

There are a number of non-socioeconomic determinants of depression. These determinants form part of the intermediary determinants of depression. The determinants include: psychological, biological and environmental aspects, of which all three are not mutually exclusive and in fact may influence each other. An example of this would be an environmental aspect, such as pollution, which can be an environmental contributor to depression through its negative affect on biological aspects (Moodley, 2013:25).

2.2.5.1 Biological aspects

Biological aspects of individuals tend to impact their vulnerability to depression. Depression may be inherited in the sense that an individual may be more susceptible to changes in neurotransmitters that interact with adversity (Burke, 2012 as cited in Moodley, 2013:24). Being a woman is another biological aspect that influences one's vulnerability to depression. Physical aspects related to

female hormones are noted to impact the ability of women to cope with change and stress. Lastly, age is also a well-documented biological aspect that is associated with depression (Moodley, 2013:24).

2.2.5.2 Psychosocial aspects

Interestingly, changes in experiences an individual goes through can change their neurobiology. This may manifest itself in the form of depression, for example, after a death in the family (Blechner, 2008: 9). Negative life events, as well as events that are not negative but significant, may influence an individual's mental state. A study by Lantz, House, Mero and Williams (2005:284) on stress, life events and socioeconomic disparities finds that disparities did exist in the exposure of adults to stressful life events between differential socioeconomic strata. Moreover, this translated into disparities in the self-rated general health status of adults in different socioeconomic strata. A positive relationship was found between negative life events experienced and the risk of mortality. In addition, poor and fair self-rated health statuses were also positively associated with negative life events experienced. When controlling for life events self-rated health, race and socioeconomic position variables (income and education) were found to be significantly explanatory of health over time. With regard to depression, more stress and negative life events do contribute to more depressive symptoms being experienced, which subsequently lead to depression.

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Population ageing is a global trend. Among developing countries population ageing has partly been driven by lower fertility and mortality rates. It is noted that the amount of people over the age of 60 is expected to increase over the next few decades (Anand, 2015:2). As people age various physical and psychosocial aspects change, which may lead to mental disorders. Relative to the younger population, the older population is more vulnerable to mental disorders because of the stress they face, as a result of being more prone to experiencing chronic diseases (Anand, 2015:2). Studies indicate that the onset of depression is more likely among the elderly, because older adults have poorer physical health conditions and are more likely to have cognitive ailments (Mulsant & Ganguli, 1999 as cited in Moodley. 2013:25).

Depressive symptoms that an individual may experience include hopelessness and helplessness. Theories surrounding helplessness indicate that a relationship exists between perceived control and depression (Tomita, Labys & Burns, 2015: 6). Environments of violence render individuals

helpless and hopeless, which are symptoms of depression. Hence, perceived neighbourhood social disorder contribute to depressive symptoms (Tomita, Labys & Burns, 2015:6).

A study by Tomita, Labys and Burns (2015) concludes that neighbourhood conditions play an important role in determining mental health outcomes (Tomita, Labys & Burns, 2015:6). The study found that adults who showed significant depressive symptoms had a higher probability of living in neighbourhoods with higher perceived social disorders (Tomita, Labys & Burns, 2015:5). The adjusted odds ratios indicated a slightly higher chance of reporting significant depressive symptoms if one resided in neighbourhoods with higher perceived social disorder.

2.2.6 Socioeconomic status

Low-socioeconomic status has been found to be correlated with psychiatric diseases. People with inadequate social support and greater stress exposure are found particularly to have a low socioeconomic status (Lorant et al., 2003:1). This indicates that psychiatric diseases are unequally distributed. More people in lower socioeconomic groups tend to have psychiatric disorders because they are more vulnerable to stressors relative to individuals in high socioeconomic groups (Lorant et al., 2003:1).

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Socioeconomic status variables such as occupation, income and education have been found in both local and international studies to be determinants of mental disorders, particularly depression. Socioeconomic status differs from socioeconomic position in figure 2-5 above. Unlike socioeconomic position, which only considers income and education, socioeconomic status, in addition to income and education, considers occupational status. The occupational status of an individual may be assessed in terms of the degree of control a worker has. Perry (1996:7) notes the significant impact personal autonomy, feelings of control and occupations that allow for controlling and planning have on the psychological state of the individual. Prior studies indicate the causal links between feeling in control of one's life and one's mental state of well-being. Lower social groups tend to have less autonomy over their lives and in their roles in their specific occupations (Perry, 1996:6-7). In addition, ethnic minorities are argued to have less personal autonomy and require greater efforts for achievements as a result of racial prejudices. Therefore groups with less personal control will tend to have higher risks of mental illnesses (Mirowsky & Ross, 1989; Dohrenwend, Shrout, Link, Martin & Skodol, 1986 as cited in Perry, 1996:6-7).

Education is critical factor in determining the risk of mental disorders. Even at early ages, education was found to strengthen mental health among children and protect against risks of mental disorders (Patel & Kleinman, 2003:3). In both Case & Deaton (2009) as well as in Witoelar et al. (2009 as cited in Ardington & Case, 2010:3), education was also stated to protect against depression. Ardington & Case (2010:3) find that this occurs through education's positive impact on physical and economic well-being.

High income inequality has been positively linked to mental disorders. South Africa is a highly income unequal country. This has contributed to the prevalence of mental disorders among people of low socioeconomic backgrounds. This is a consistent finding in literature on the relationship between poverty and mental disorders. The literature on low to middle income countries indicates a strong connection between variables such as income, education and housing and the susceptibility of individuals to mental disorders (Folb et al., 2015: 2). The risk of mental disorders is therefore inversely associated with income. Lower risks of lifetime mental disorders were also more common in the low-income group relative to the high-income group (Stein, Seedat, Herman, Moomal, Heeringa, Kessler & Williams, 2009:3)

Stein et al. (2009:5) find that income did not have a strong relationship with mental disorders, despite an association between income and the risk of mental disorders having been found in their study. Hence when poverty is considered, money-metric measures on poverty and inequality can be quite limited in their ability to indicate differences in economic well-being between household members (Posel, 2012:2). They simply assume that all economic resources are equally distributed within a household, which is not the case. Money metric measures also are not able to depict the quality of life on an individual; they can only present the economic well-being of that individual (Posel, 2012:2).

Subjective well-being is a predictor of poor health and unemployment (Posel, 2012:2). Having a poor perceived social status; that is that one is at the bottom of the social status ladder, has a negative effect on the emotional well-being of an individual. This effect was more prevalent among men than women (Ardington & Case, 2010:4). Prior studies by Posel and Casale (2011) as cited in Posel (2012:11) indicate a correlation between life satisfaction and perceived economic ranking or economic standing. People who perceived themselves to have a high economic ranking, as well

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as adults whose actual income ranked them high on the economic ladder, reported high levels of life satisfaction. (Posel, 2012:11).

Unemployment is positively related to the risk of mental disorders. The unemployment referred to is involuntary unemployment (Perry, 1996:8). This phenomenon psychologically impacts individuals and may lead to criminal violence, alcohol and drug abuse, as well as the possible abuse of an individual's spouse and children (Perry, 1996:8). Stress, frustration and nervousness are symptoms that are found to be common among the unemployed (Qin, Wang & Hsieh, 2015: 11). Hence the unemployed are found to have more depressive symptoms. Qin, Wang and Hseih (2015:11) estimated higher depression scores for the employed relative to the unemployed, which was attributed to the high standard deviation in the CES-D scores among the unemployed, which indicated an unstable mental health status (Qin, Wang & Hsieh, 2015: 11). Consequently, stressful activities such as schooling and supporting family members, which were not experienced by the unemployed were interpreted to have relieved depressive symptoms (Qin, Wang & Hsieh, 2015:12).

Although age has been mentioned to be a biological aspect which is a part of the non-socioeconomic determinants, it is also a socioeconomic factor that can be used in explaining the distribution and prevalence of depression. There is a consensus in the literature that depression increased with age. The differences in depression scores between the young adult and middle adulthood ages was attribute to the presence of dependants in the middle adulthood household. The dependants, sometimes children, would require support from the middle adulthood aged individual (Ardington & Case, 2010:2). Other reasons include: the age group being the lowest in terms of socioeconomic status, having lower household expenditure per capita as well as residing in urban informal areas. The above mentioned correlates of depression were stated to characterise people living in poverty (Ardington & Case, 2010:3).

Liang et al. (2012:4) argue that it does not suffice to only consider the impact social factors have on depression, and as a result target social factors such as socioeconomic status through interventions, in order to improve mental health outcomes. Instead, considering the situation from an individual's perspective, a systemic perspective (SDH) is suggested in which social inequality is primarily noted as the problem instead of low individual socioeconomic status. This would lead to policies related to increasing social justice, rather than improving an individual's socioeconomic

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status. Consequently depression would become a public concern instead of an individual concern. Furthermore this problem should not only concern psychiatrists but it should be an inter-sectoral goal for policymakers (Liang, Gong, Wen, Guan, Li, Yin & Wang, 2012:4).

2.2.7 Social inequality

2.2.7.1 Race

Mental disorders affect a significant portion of the population in South Africa. The prevalence of mental disorders is further worsened by South Africa's legacy of violence and exclusion based on race (Petersen, Kleintjes, Campbell-Hall, Mjadu, Lund, Bhana, Kakuma, Mlanjeni, Bird, Drew, Faydi, Funk, Green, Omar & Flisher, 2008:14). Hence, some of the reasons for expecting the prevalence of psychiatric disorders in South Africa to be high include political violence and discrimination based on race that was experienced during the apartheid era. Furthermore, poverty issues consequently led to people in South Africa being highly susceptible to mental disorders. South Africa's past has therefore affected subpopulations in terms of creating greater socioeconomic disparities between the white and black population. Consequently, the more socioeconomically deprived black population is at an increased risk of experiencing mental disorders relative to the white population (Stein et Al., 2009:1)

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The historical legacy of apartheid and the violence and victimisation many experienced based on race is reason to believe that people in the country are at a high risk of experiencing mental disorders at some point in their lives. Even after the end of apartheid, high violence and crime rates still persist. Other circumstantial stresses such as economic deprivation and the risk of mining accidents in a mining-based country are reasons for studies to evaluate the prevalence of mental disorders in South Africa (Williams, Seedat, Herman, Moomal, Heeringa, Kessler & Stein, 2009:2).

The coloured population was more likely to report a mental disorder relative to the white population (Williams et al., 2009:13). Coloureds were more likely to experience anxiety disorders and substance abuse disorders relative to the other racial groups. Indians, however, reported more mood disorders and furthermore were more likely to report moderate to serious severity levels relative to the other racial groups. Stein et al. (2009) note that the lower substance abuse disorder prevalence among Indians may be explained by the fact that Muslims make up a significantly large

proportion of Indians. Since, their faith restricts alcohol consumption, substance abuse disorder is consequently expected to be less common among Indians.

The black population has also been found to be more vulnerable to depression and hence have higher depression prevalence rates. This is a consistent finding in literature; however there are studies that prove there are exceptions. Stein et al. (2009) did not find socioeconomic and racial differences, which structurally persist as a result of apartheid, to be strong correlates of disparities in mental health outcomes between subpopulations (Stein et al., 2009:6). It is therefore important to take note not only of racial differences in depression prevalence rates, but to better understand the depression factors that are linked to social inequality that may drive some studies to not find or to find racial disparities in mental health outcomes.

2.2.7.2 Gender

Women are more susceptible to poverty as they have lower access to schooling and job opportunities. This limits their ability to have adequate resources in order to meet their basic needs and avoid poverty. Furthermore, poor educational outcomes and low income may result from this lower access to job and educational opportunities. This in turn would result in greater mental health issues (Patel & Kleinman, 2003:4). In fact, women are found to have higher prevalence rates of mental disorders (Perry, 1996:9). This can be attributed to the fact that the poor are primarily women. Women hold less social and economic power, as well as less personal autonomy relative to men. This can be seen in labour market participation as well as in labour market earnings (Perry, 1996:10). Coupled with the psychological stress of sometimes independently taking care of their children and supporting other family members, women are found to experience greater psychological stress as a result, relative to men.

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In terms of the type of mental disorders, females tend to have anxiety or mood disorders (Williams et al., 2009:5 & Stein et al., 2009:3). On the other hand, males were more likely to have a substance abuse disorder relative to females (Williams et al., 2009:5; Stein et al., 2009:3). Overall, females are more likely to report mental disorders as well as be more likely to report moderate to serious severity levels for mental disorders experienced (Williams et al., 2009:5).

2.2.7.4 Age

Depression affects many older adults globally. It makes them susceptible to disease, a lower ability to function physically, cognitively and socially. The prevalence of depression is found to be lower

among older adults relative to the younger population according to DSM-III (Peltzer & Phaswana-Mafuya, 2013:1). This notion is supported by studies from Hamad, Fernald, Karlan & Zinman (2008:6), Anand (2015:8) as well as Ardington and Case (2010:2), which all report a positive relationship between depression and age.

Intergenerational living arrangements provide care and support for older adults. However, weakening support mechanisms have been found to be increasingly more prominent. This trend has been attributed to modernisation as well as greater economic difficulties that made it more strenuous for younger working adults to maintain support for older adults. The health of young adults has also been severely compromised by the HIV/AIDS endemic. Hence studies indicate an increasing trend of older adults taking care of young children due to the absence of the young adult generation. These were referred to as 'skipped-generation households' (Mckinnon, Harper & Moore, 2013:1).

In South Africa treatment facilities tend to not be targeted towards children and adolescents, despite the early age of onset for mental disorders such as substance abuse disorders. Of the 2.8 beds per 100 000 population, only 3.8% of the beds in community-based inpatient units were specifically reserved for adolescents and children (Petersen, Kleintjes, Campbell-Hall, Mjadu, Lund, Bhana, Kakuma, Mlanjeni, Bird, Drew, Faydi, Funk, Green, Omar & Flisher, 2008:116). This is despite the burden of mental disorders in South Africa being estimated to be 17% for children and adolescents (Kleintjies et al., 2006 as cited in Lund et al., 2008:14). Nationally 23 mental hospitals existed in South Africa at the time of the study, which provided 18 beds per 100 000 population, of which only 1% of the beds were specifically reserved for children and adolescents (Lund et al., 2008:116). This indicates a clear under provision of mental health services targeted towards children and adolescents.

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According to Lund et al. (2008:113) clinical study participants indicate that they seldom treated children or adolescents with mental disorders. The respondents further indicated that the majority of child and adolescent cases were related to substance abuse, sexual abuse and malnutrition (Lund et al., 2008: 113).

2.2.7.5 Rural/Urban

Depression may differ across rural and urban contexts. Depression prevalence rates were found to differ across regions as well as between the rural and urban population in China. As Tomita Labys

& Burns (2015) suggest in their study, the neighbourhood one lives in does contribute to one's mental well-being. Depressive symptoms tend to be more common, particularly notable in people living in neighbourhoods with higher perceived social disorders (Tomita, Labys & Burns, 2015:5).

Social inequality therefore exists across gender and racial/ ethnic groups. Differences in socioeconomic disadvantages between groups is found to be a major determinant of the disparities in mental health outcomes across these population groups. In addition to socioeconomic factors, health factors also play a role in determining mental health. Physical health and mental health status are interdependent. The treatment of one should be performed considering the other.

2.2.8 Physical Health

Mental and behavioral disorders result in considerable disability and morbidity (Patel & Kleinman, 2003:1). Physical health is a well-established predictor of social class and mental health. The impoverished populations are found to have life expectancies that are lower than that of their wealthier counterparts. Furthermore, there is an overrepresentation of the disease and mortality rates among lower socioeconomic groups. Inequities in health outcomes are therefore present and seen to follow a socioeconomic gradient (Perry, 1996:10). Interestingly, Peltzer and Phaswana-Mafuya (2013:6) did not find significant disparities in depression across socioeconomic variables. Studies by Ataguba, Day & McIntyre (2015) on the social determinants of health and health inequities in South Africa find that social protection and employment were the most significant contributor to disparities in good health. Other significant contributors to health disparities included 'knowledge and education', and 'housing and infrastructure.' The study measured health outcomes as part of self-reported health statuses. 'Knowledge and education' were measured as the completion of secondary school education. Housing and infrastructure were measured as the presence or absence of basic amenities such as clean drinking water and electricity in a household. Health factors were actually found to be more significant correlates of depression.

The diseases that are correlated with depression include non-communicable and communicable diseases. Depression has also been linked to non-communicable diseases such as hypertension (Folb et al., 2015: 2). Communicable diseases such as HIV/AIDS are also found to be linked to mental depression. A study on Sub-Saharan Africa reports that HIV/AIDS prevalence rates and maternal mortality rates are positively correlated with depression (Mckinnon, Harper & Moore, 2013: 5).

The relationship between physical and mental health, depression in particular, is therefore bi-directional. Collins, Holman, Freeman and Patel (2006:2) state that studies in North America and Europe find that people with severe mental illnesses tend to be economically disadvantaged and often are at a high risk of contracting HIV/AIDS. The impact of physical disabilities on mental health is more commonly seen among older adults because they tend to be more likely to have physical ailments. In the South African context, HIV/AIDS is particularly a worrisome disease because it is communicable and is also found to be correlated to depression. Physical health can therefore be added to the other correlates of depression as it is a crucial non-socioeconomic determinant of depression.

The overall demographic correlates of poor mental health were being older, widowed, and female and having poor physical health (Ardington & Case, 2010:1). Tomita, Labys & Burns (2015:5) add being African, unmarried, and a poorer self-reported general health as characterising people who are more likely to be depressed (Tomita, Labys & Burns, 2015:5). A demographic profile can be built from this to determine who requires treatment and who government should target in mental health interventions. Part of assisting mentally ill individuals includes ensuring social support which may assist them in dealing with negative life events and coping with change. It is thus imperative to understand the role social capital has in coping with mental disorders.

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2.2.9 Social Capital

Social capital and networks are important for those who experience mental illnesses in order for them to participate in society and maintain a relationship with the individual's proxy decision makers and caregivers. However, due to social stigma and sometimes due to the severity of the mental illness, individuals with the disorder find a decline in the ability of the person to create a social network (Segal, Silverman & Baumohl, 1999 as cited in Frank & McGuire, 1999). This is dangerous particularly when negative events occur that may cause stress and a mentally ill individual lacks the social support to cope with the event. According to Cassel (1976) as cited in Perry (1996:9), social support may act as a buffer as well as contribute positively to a person in coping with mental disorders.

The importance of social and community treatment as a means of social support to deal with negative events is critical (Blechner, 2008: 6). Social change can be identified as a factor that contributes to increasing the risk and prevalence of mental disorders (Patel & Kleinman, 2003:3).

Migration, which breaks up family ties, contributes to the increase in suicide rates. Overall this highlights the inability of some people to cope with change and negative events especially without emotional support from family. Other changes of a social nature that impact the mental health of individuals is less social support and isolation, also related to migration. This finding was consistent with studies conducted in both China and Sudan (Patel & Kleinman, 2003:3).

In China, groups that are most affected by mental disorders include the youth, the elderly and migrant workers (Qin, Wang & Hsieh, 2015: 4). Social exclusion, low socioeconomic status as well as unfair treatment at work were noted to be factors that played a role in migrant workers' mental disorders (Hu et al., 2012 as cited in Qin, Wang & Hsieh, 2015: 4). The depressive symptoms found to be most prevalent among migrant workers include fatigue, hopelessness, loneliness, irritation and anger (Nie et al., 2013 as cited in Qin, Wang & Hsieh, 2015: 5). Less westernised methods of treatment may play a role in reducing depressive symptoms such as sadness. Rituals of community support in various countries include Shiv'a and Ndup (Blechner, 2008: 6). These rituals assist individuals cope with negative life events such as death. Social and community treatment can be a means of social support to deal with negative events.

Despite social networks playing a crucial role in assisting people cope with social change and negative life events, treatment from a mental health professional is still vital in understanding the root causes of the illness as well as ways of remedying the illness.

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The table below summarises the theoretical approaches discussed. It is important to note that even though the theories are listed separately, they are, however, not mutually exclusive. In fact they are intertwined in some aspects. All of theories involve some aspect of socioeconomic status being linked to health outcomes. The pathways approach does consider poverty, social selection, the life course perspective and the social causation approach but it does not directly link poverty and socioeconomic status to health in a simplified manner. The pathways approach suggests that poverty and socioeconomic status, for example, affect the biological condition of an individual through hunger. Accordingly, this results in a worsened overall health status directly because of the biological condition of an individual and indirectly through a poverty/ low socioeconomic status.

The reason for selecting the pathways model, specifically the WHO-SDH framework, is firstly the holistic perspective on the relationship between social determinants and health offered by the

model. Secondly, the model breaks down the impact of the social determinants on health into structural and intermediate pathways. Social causation theory and the poverty approach assume that variables within structural determinants impact health directly when in fact the impact on health occurs through direct pathways. Although the life course pathway model takes into account structural and intermediate determinants, the life course approach consists of heterogeneity problems. There are also uncertainties in terms of whether age cohorts should be compared cross-sectionally or in a panel (Hutchison, 2011:34). If compared cross-sectionally, historical context will be missed. An example would be comparing the relationship between education and health for 40-50 year old adults pre-1994 and post-1994 in South Africa, as these would yield different results that will be linked to the historical context. From a panel perspective, historical contexts and changes in the socioeconomic environment over time can be taken into account when comparing the same 40-50 year old age cohort pre-1994 and post-1994. The only problem is the life course perspective requires longitudinal data over a considerable time period in order to compare the age cohorts. Data limitations may therefore be a challenge in using the life course perspective.

Table 2-1: Summary of theories on the determinants of depression

Theories linking socioeconomic status to health outcomes	**Explanation**	**Limitations**
Poverty Approach	Considers the health status of individuals above and below the poverty line. The theory was used a great deal pre-1985	Very simplistic. Only focused on income poverty. Strongly assumes that health above the poverty line does not improve with increases in income.
Social causation	Hypothesises that the socioeconomic status of an individual influences their health status	Focuses on socioeconomic status as the only determinant of depression. Fails to describe the direct pathways through which socioeconomic status influences health.

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Social selection/drift	Hypothesises that the health status of an individual influences their socioeconomic Status	Focuses on health as the only determinant of socioeconomic status. From a methodological perspective it requires longitudinal data in order to track the individual's socioeconomic status over a prolonged period of time.
Life course perspective	A human development theory that suggests that social and structural determinants of health affect individuals differently at varying stages of their development. The theory notes the importance of timing. Models: the critical period's model, the accumulation of risk model and the pathway model	Complexities in terms of heterogeneity and diversity (Hutchison, 2011:34) Difficulty in making comparisons at an international level. (Hutchison, 2011:34) The micro and macro aspects remain isolated (Hutchison, 2011:35) Uncertainties in whether cross-sectional or panel data should be used for analysis (Hutchison, 2011:34)
Pathways/Mechanisms Approach	The model considers the pathways through which structural determinants affect health outcomes. The determinants of health outcomes are split into upstream and downstream or structural and intermediate. The upstream (Structural) determinants influence the intermediate determinants directly and affect health outcomes indirectly. The downstream (intermediate) affect health outcomes directly.	Fails to consider action that takes place at an individual and community level (Schiebe, 2014:61).

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2.3 Empirical Literature

2.3.1 Mental Health and Human Capital

Human capital can be defined as an individual's value to society being their production potential. Therefore diseases that result in mortality/morbidity decrease production potential. Currie and Stabile (2007) report a relationship between mental health in childhood and human capital. In terms of educational success, they find that mentally ill children did not perform as well relative to non-mentally ill children. Although depression was not found to impact mathematical and reading scores, they found that it increased the likelihood of grade repetition. According to Nunnally (1961) as cited in Frank and McGuire (1999), "regardless of the respondent's education, the mentally ill were regarded as dangerous, unpredictable, and socially of little value." This statement indicates that even education is not enough to protect individuals from the effect mental disorders have on one's quality of life. However, education cannot be disregarded as it allows for greater awareness of mental disorders and, according to Zimmerman & Katon (2005), means the individual is more likely to be informed about treatment options, as well as a higher likelihood of effectively relieving some symptoms experienced by the mentally ill.

Depression has been found to impact the ability of people to work. Symptoms associated with depression such as fatigue, and lack of concentration have played a role. Studies by Swindle and Kroeke and Braun (2001) suggest that energy, or a lack of energy, can have a critical role as a component of depression. A number of studies on depression focus on the emotional aspect only. Swindle et al. (2001) highlight the fact that depression is also related to a lack of energy. Beck (1967) as cited in Swindle et al. (2001:5) found that 79% of patients who were depressed were found to have a greater lack of energy (fatigue) relative to non-depressed patients, of which only a third reported having a lack of energy (fatigue). Thus, the prevalence of fatigue does contribute to depressive symptoms.

SADAG reports some symptoms experienced by depressed workers in South Africa, such as. poor concentration, slower thinking speed and poor memory. SADAG (n.d) quotes Psychiatrist and Clinic Psychologist Dr Frans Korb, as stating "depression negatively impacts productivity. If an employee has depression but is at work, they are five times less productive than an employee who was absent due to depression." SADAG also reports SA employees taking an average of 18 days off work due to depression. Moreover, only half of those diagnosed with depression took time off.

Considering the statement by Dr Korb as well as the symptoms experienced by those depressed, work productivity is definitely negatively affected by a mental illness like depression. This reinforces the link between depression and fatigue as well as its impact on productivity and human capital. Depression is also associated with a higher likelihood of suicide and premature death. This impacts human capital as the production potential of an individual with the illness may not be fully realised.

The human capital approach to the calculation of indirect costs quantifies costs in terms of lost earnings. Thus, the indirect costs of mental illness can be defined in terms of employment and earnings. It is however not always so straightforward. Frank and McGuire (1999:9) report that people with some mental illnesses may find that the illness affects personal characteristics in a manner that positively adds to earnings, so people with OCD have a higher likelihood of having traits associated with creativity and attention to detail, which are both positive work traits. The approach has been applied in South Africa by Lund & Meyer (2013) to estimate lost earnings associated with mental illnesses.

2.3.2 Mental disorders have a social and economic impact

Mental illnesses not only affect the mentally ill individuals but their family and society as whole. Some of the social consequences of mental disorders include poverty, crime, HIV/AIDS and violence. Overall mental disorders not only reduce the life expectancy of an individual but also reduce their quality of life relative to the general population. Studies by Wahlbeck, Westman Nordentoft, Gissler & Laursen, (2011) on Nordic countries confirm that mental disorders do reduce life expectancy, they find that people with mental disorders live 15 to 20 years less than the general population. Suicide has been identified as a big contributor to mortality in South Africa by the SADAG, as cited in Bateman (2014). In addition to the deaths, mental illnesses add to the disease burden in South Africa. The mental health atlas 2014 (World Health Organisation, 2015) estimated that in South Africa the burden of mental disorders using the DALY estimates per 100 000 population was 3,191. Estimates by Schneider, M., Norman, R., Parry, C., Bradshaw, D., Pluddemann, A. & Collaboration SA (2007) indicate that unipolar (major) depressive disorders and alcohol use contributed 5.8% and 2.8% respectively to the burden of disease in South Africa. DALY estimates were introduced by the global-burden of disease study (Lopez, Mathers, Ezzati, Jamison, & Murray, 1996) to estimates the duration of healthy life lost by adding premature death

and living with a disability. The DALY estimates therefore indicate that mental disorders have significant influences on the livelihood of people in South Africa.

2.3.3 International and local studies

2.3.3.1 Prevalence rates

Mental health is a critical aspect in the overall well-being of an individual. Due to significant deprivation people experience in Africa, the prevalence of mental disorders can be expected to be high among African countries (Williams et al., 2009:2). Studies by Anand (2015), which focused on depressive symptoms among older adults in six low to middle income countries, predicted varying prevalence rates. The highest prevalence rate of depression among older adults was in India (27.4%) and Mexico (23.7%) while China (2.6%) and South Africa (6.4%) had the lowest depression prevalence rates among the six countries (Anand, 2015:3). This study, however, restricts its study population to older adults, which confines the generalisability of the findings to older adults.

China, which is a developing country, has been found to have high prevalence rates similar to those reported in the Patel & Kleinman (2003) study, rather than the rates reported for older adults in China by Anand (2015). Depression was estimated to contribute to over 20% of the total burden of disease in China (Fan et al., 2013 as cited in Qin, Wang & Hsieh, 2015: 3). Studies by Qin, Wang & Hsieh (2015), using an ordered probit regression estimated that roughly a quarter (24.79%) of adults in China had frequent depressive symptoms. Furthermore, the prevalence of depression among adults in China was estimated to be 23.20%. (Qin, Wang & Hsieh, 2015:2). China therefore, like other developing countries, reports significant depression prevalence rates.

Patel & Kleinman (2003) review 11 studies on mental disorders in low to middle income countries. The study found that the prevalence rates across the 11 countries ranged between 20% and 30% (Patel & Kleinman, 2003:2). Lorant et al. (2003), who conduct a meta-analysis on studies done on mental disorders in countries particularly in North America and Europe, report the average prevalence of psychiatric disorders to 9%. This is significantly lower than the prevalence rate in low to middle income countries indicated by Patel & Kleinman (2003), Mckinnon, Harper & Moore (2013) as well as the study by Qin, Wang & Hsieh (2015) conducted in China. According to de Boer et al. (2008, as cited in Funk, Drew & Knapp (2012:2) 40% of people in low to middle income countries had some sort of mental disorder.

The lifetime prevalence of any mental disorder in South Africa was found to be markedly high at 30.3% (Stein et al., 2009:3). This means that roughly a third of all South Africans are experiencing some form of mental disorder at some point in their life. Among the Eden and Overberg districts in South Africa, the lifetime prevalence rates were similar. Andersson, Schierenbeck, Strumpher, Krantz, Topper, Backman, Ricks & Van Rooyen (2013:4) estimated the life-time prevalence rate of depression to be 31.4% among the study participants. The study also found that 15.2% of the study participants were currently depressed. Stein et al. (2009:3) find that the mental disorders with the highest lifetime prevalence included alcohol abuse, agoraphobia and major depression at 11.4%, 9.8%, and 9.8% respectively.

South Africa is found to have a higher lifetime prevalence of mental disorders than that of Nigeria but lower than that of the USA (where roughly half of the population experienced one or more mental disorder in their life) (Stein et al., 2009:4). Williams et al. (2009:5) predicted the prevalence of mental disorders in South Africa to be similar to levels in Colombia and Lebanon (Williams et al., 2009:5). Williams et al. (2009) also find that mental disorders were highly prevalent in South Africa compared to other middle to high income nations. A high percentage, 42.7% of mental disorders experienced in South Africa were classified as mild whilst the severity of the remaining 57.3% could be classified between moderate and serious (Williams et al., 2009:4). There was a clear correlation between the prevalence and severity of mental disorders. A total of 13.8% of people that were diagnosed for one disorder were diagnosed to have it at a serious severity level. On the other hand, 70.7% of people with three or more mental disorders, had the disorders at a serious severity level. The results suggest the severity of mental disorders to be a cause for concern (Williams et al., 2009:4). Despite this, the majority of those with moderate to severe cases of mental illness remained untreated (Williams et al., 2009:7). In addition, the majority of people who were treated for mental disorders in South Africa were found to be treated in the general medical sector instead of being treated at a specialised facility (Williams et al., 2009:7).

Mckinnon, Harper & Moore (2013) consider the relationship between living arrangements and depressive symptoms among Sub-Saharan countries conducted between the periods 2002-2003. They predicted that among Sub-Saharan countries the crude depression prevalence rate was highest in Chad (21.47%) and Swaziland (17.69%). The adjusted depression prevalence rates, although slightly lower, still indicated the greatest depression prevalence rates to be in Chad

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(19.72%) and Swaziland (16.29%) (Mckinnon, Harper & Moore, 2013:5). The estimations were performed at a 95% confidence interval.

2.3.3.2 Socioeconomic status

Given the theories discussed on socioeconomic status and depression, we need to discuss existing evidence on the link between socioeconomic status variables and depression. Studies by Qin, Wang & Hsieh (2015:18), Stein et al. (2009:5), Folb et al. (2015: 5), Ardington & Case (2010:3), Hamad, Fernald, Karlan & Zinman (2008:2), Andersson et al. (2013:5) and Lorant et al. (2003:8) all report that individuals with higher educational attainment levels are less likely to be depressed. Lorant et al. (2003:8) further report that for each additional year of education, the odds of being depressed decrease by 3%. Andersson et al. (2013:5), whose study focused on the Eastern Cape, found that fewer than 30% of study participants who had completed high school or additionally completed university reported being depressed at some point in their life (lifetime depression). On the other hand, 41% of adults, who had not completed primary school, reported lifetime depression.

Studies in China indicate that relative to the illiterate and semiliterate, individuals that have a university level or masters/doctorate level of education have higher probabilities of being mentally healthy (Qin, Wang & Hsieh, 2015:11). Studies in rural China by Liang, Gong, Wen, Guan, Li, Yin & Wang (2012) also find this negative relationship between education and depression. The study finds that with greater years of schooling, the prevalence of depression is lower (Liang, Gong, Wen, Guan, Li, Yin & Wang, 2012: 3). Findings from the study further indicate that the prevalence rate of moderate and severe depression among adults with below average years of schooling was 13.19% compared to a 5.34% prevalence rate of moderate and severe depression among adults with above average years of schooling. The same trend was found for mild depression. That is, 7.33% and 12.54% prevalence rates among adults with above average and below average years of schooling respectively. Moderate and severe depression prevalence rates reported to be 3.40%, 4.52% and 16.73% for adults with good, fair and poor self-reported economic statuses respectively. Educational and self-reported economic statuses indicate an inverse relationship between socioeconomic status and depression (Liang, Gong, Wen, Guan, Li, Yin & Wang, 2012:3)

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Ardington & Case (2010) report that, except for a chronic health condition indicator among males, increasing years of education protect against negative health outcomes, and socioeconomic variables such as inter alia, child and adult hunger, perceiving one's self as being lowest in the lowest social status level (Ardington & Case, 2010:7). In marginal terms, ceteris paribus, for each year of education, depression scores reduced by 0.16 points for African men and 0.18 points for African women (Ardington & Case, 2010:8). Interestingly, the study also finds the average years of completed education being higher for individuals aged been 15 and 24 years than that of the 25 to 49 year age group as well as that of the 50 plus age group in South Africa. This was linked to the influence of South Africa's history of apartheid (Ardington & Case, 2010:9). Individuals who studied during that period of time (apartheid) were among the older age cohorts at the time of the study which explains the lower educational attainment level among that group relative to younger age cohorts. Tomita, Labys and Burns (2015), who also use data from NIDS, find that people in South Africa with less than high school completion had greater odds of reporting significant depressive symptomatology relative to those who had completed high school (Tomita, Labys & Burns, 2015:13)

Patel & Kleinman (2003) assessed mental disorders in low to middle income countries and found the strongest relationship established was between low education and the occurrence of mental disorders. Although various poverty indicators were used in the studies, the results still indicate a correlation between poverty and mental disorders. The studies on low-to-middle income countries did not find a clear relationship between income inequality and common mental disorders. Despite this, some of the studies did find, although weak, a relationship between residing in income unequal nations with depression among women. Having a low income was associated with poor living conditions once adjusted for education (Patel & Kleinman, 2003:3).

Qin, Wang & Hsieh (2015:12) find that depression scores were found to be higher among low income groups (0-5000 yuan) in China. The prevalence rates were 28.81% for low income groups which far exceeded the depression prevalence rate of 12. 23% experienced by those in the highest income groups (>30000 yuan). Anand (2015:8) reports household wealth to be negatively associated with depression among older adults in Ghana, South Africa, Mexico, Russia and China. This further underscores the point that individuals in higher wealth quintiles had significantly lower odds of being depressed relative to individuals in lower wealth quintiles. Ardington & Case

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(2010:5) also found fewer assets to be found among individuals with higher depression scores. Lower income is noted in Qin, Wang and Hsieh (2015:18), Folb et al. (2015: 11), Hamad et al. (2008:6) and Lorant et al. (2003:8), to be inversely associated with depression. Lorant et al. (2003:8), who conducted a meta-analysis on depression and socioeconomic status, further report that for each 1% increase in income ranking, the odds of being depressed reduces by 0.74%.

A study by Posel (2012) measured perceived economic status on a rank of 1 to 6 and linked it to life satisfaction. The study found that the most frequently reported perceived economic status level was between 1.5 and 2 in 2008. The modal perceived economic ranking increased to the third rank in 2010 (Posel, 2012:6). Less than 4% of adults in South Africa reported to perceive themselves to be in the richest third of the population. More than 40 % of the population reported themselves to be among the poorest 40% of the population. The study interprets these results as an underestimation of economic ranking among South African adults (Posel, 2012:6).

Results from the fixed-effects regression in the study further indicate a positive relationship between absolute income and economic standing as well as a positive relationship between absolute income and life satisfaction (Posel, 2012:12). Using the NIDS data the study found that from 2008 to 2012 (wave 1 to wave 2), the proportion of adults who were satisfied with life decreased. People with a tertiary education, married, employed, not economically active with good health reported greater life satisfaction (Posel, 2012:14). The study found the most frequently reported life satisfaction score was 5 out of 10 (Posel, 2012:3). This was also the most frequently reported life satisfaction level among Africans (Posel, 2012:4). Africans also reported a much greater fall in life satisfaction between the two waves, relative to whites. The decrease in overall satisfaction was attributed to the decrease in life satisfaction reported among Africans (Posel, 2012:4). Anand (2015:8) reports higher self-reported life satisfaction to be inversely related to depression among older adults. Hence, decreased life satisfaction among Africans may translate into higher depression scores for Africans.

A study by Mckinnon, Harper and Moore reveals at a 95% confidence interval and at these margins, skipped generation living arrangements had a depression prevalence rate 2.9% higher than multigenerational households. Single generation living arrangements had a depression prevalence rate 3.6% higher than multigenerational households. The results of the covariate-adjusted random effects pooled prevalence of depressive symptoms was 2.3% higher for skipped

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generation living arrangements relative to multigenerational living arrangements (Mckinnon, Harper & Moore, 2013:5).

People who are more likely to be depressed or experience depressive symptoms, have been characterised as living in in households with more household members, having greater non-employment sources of income, as well as individuals who were formerly married. Relative to married individuals, people who were formerly married are more likely to have experienced mood disorders, anxiety disorders, substance abuse disorder in general at some point in their life. (Stein et. al, 2009:3). In fact, individuals who are married have a lower chance of reporting any form of mental disorder relative to separated, widowed or divorced individuals. Widowed individuals were found in a study in China to have the highest prevalence rate (39.58%) compared to other marital statuses (Qin, Wang & Hsieh, 2015:11). Moreover, lower depression severity levels are reported by married individuals relative to formerly married individuals (Stein et al., 2009:6). The stress, emotional pain, and perhaps financial insecurity associated with the death of one's spouse makes a widowed individual susceptible to depression. Marriage does not necessarily always mean that one is less likely to be depressed. Unstable marriages are found to increase emotional stress/ depression in a study in South Africa (Hamad et al., 2008: 2).

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Ardington and Case (2012) assessed the interaction between socioeconomic status and depression in the NIDS dataset. The study found differences in subpopulation depression scores. Black Africans had the highest depression scores among the various race groups. Women had higher depression scores relative to men. Consequently, African females had the highest depression scores considering the gender and race demographics. The 60% disparity in depression scores among blacks and whites was attributed to inequalities in socioeconomic status between the two racial groups (Ardington & Case, 2010:2). This study will therefore consider how what kind of link other studies have found between race and gender with depression next.

2.3.3.3 Race

Although the African population had high odds ratios relative to the white population, the odds ratios they reported did not exceed that of the coloured population (Williams et al., 2009:13). Hamad, Fernald, Karlan and Zinman (2008:6) report that in at least four of the five multivariate models they used for estimation, being multiracial was identified to correlate with higher depression scores and more perceived stress relative to Africans. In addition, relative to African

males, white males had a 39% lower depression score adjusted for age. For females, white females had a 43% lower depression score relative to African females (Ardington & Case, 2010:4). Other studies in South Africa report that relative to whites, Africans had 2.92 times greater odds of reporting significant depressive symptomatology (Tomita, Labys & Burns, 2015:13). Still looking at gender, females were found to have more depressive symptoms when children in the household were hungry often (Ardington & Case, 2010:4). Relative to Africans, whites had less depressive symptoms as well as less perceived stress (Hamad et al., 2008:6).

Andersson et al. (2013), whose study focused on the Eastern Cape in South Africa, report higher lifetime depression prevalence rates (31.3%) among black men relative to other racial groups. Interestingly, white females reported the highest lifetime prevalence rates (41%) among the female racial groups. However, overall the black population had the highest lifetime prevalence rate overall of 32.8%, which marginally exceeded that of whites (32.2%) (driven up by high white female lifetime prevalence rates) (Andersson et al., 2013:5)

2.3.3.4 Gender

Hamad et al. (2008:2) as well as Qin, Wang and Hsieh (2015:18) find that women are more susceptible to depression and are found to have higher depression prevalence rates relative to men. Hamad et al. (2008:6) also report that females have a higher perceived stress relative to males. Studies by Andersson et al. (2013) as well as Ardington and Case (2010) and Williams et al. (2009) find that women reported higher depression scores relative to men. The Andersson et al. (2013) study focused on the Eastern Cape and reveals that women had high prevalence rates for both current and lifetime depression. The current depression prevalence rate was 14.7% in men and 16.1% in women. Lifetime prevalence rates were 33.2% and 29.8% among women and men respectively (Andersson et al., 2013:4). The Ardington and Case (2010) study looks at the whole of South Africa and also finds the depression scores for women in South Africa are higher than their male counterparts across all the race groups. The average depression score for Africans was 8.36 and for whites 5.24. The average depression score for women was 8.28 and 7.39 for men (Ardington & Case, 2010:12). Other studies indicate that females had 1.36 times greater odds of having significant depressive symptomatology relative to males (Tomita, Labys & Burns, 2015:13). Even among older adults, females also have higher depression prevalence rates relative to their male counterparts (Anand, 2015:4). A study on older adults aged 50 and above in low-to-

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middle income countries reports that relative to older males, older females have a significantly higher likelihood of being depressed. This outcome was statistically significant in China, Mexico, and Russia (Anand, 2015:8).

A study on depression in China reports that women are 8.8% more likely to suffer from depression relative to men. This further supports the notion that more females experience mental disorders relative to males and there is, in fact, disparities in mental health outcomes among males and females.

If there were no socioeconomic differences across race and gender, there may not be significant disparities in depression outcomes across the groups. This was the concluding result in a study on older adults in South Africa by Peltzer and Phaswana-Mafuya (2013). In their study, they found a lack of disparities in depression outcomes across socio-demographic groups, which was attributed to the insignificant socioeconomic differences across the study participants. & Phaswana-Mafuya, 2013:6).

2.3.3.5 Age

Age is positively correlated with experiencing more depressive symptoms. In higher age cohorts, people have greater odds of experiencing depressive symptoms and thus higher prevalence rates are found among the older population relative to the younger population (Tomita, Labys & Burns, 2015:5; Peltzer & Phaswana-Mafuya, 2013:4).

Findings from a study in China by Qin, Wang and Hsieh (2015), however, report the reverse. Depressive symptoms were more common among younger adults (26.53%) defined as adults between the ages of 18 and 30, compared to the elderly (23.25%) (Qin, Wang & Hsieh, 2015:10). Furthermore, depressive symptoms were found to increase by 0.1% with a 1 year increase in age (Qin, Wang & Hsieh, 2015:11). On the contrary, findings from Williams et al. (2009) did indicate that a strong relationship between age and the odds of experiencing a mental disorder did not exist. Mood disorders, as well as substance abuse disorders, were however more commonly experienced among the younger age groups. Particularly, mood disorders which declined with age, were more common among the younger age groups (Williams et al., 2009:5).

Different mental disorders are therefore more prevalent among certain age cohorts relative to others. Substance abuse and social phobia disorder have early stages of onset (Stein et al., 2009:4).

The odds ratios are statistically significant and greater in size for the younger age group (Stein et. al, 2009:4). In terms of the assessment of mental disorder across age cohorts, 13.3% of the substance use disorders occurred by 21 years of age, indicating early onset (Stein et. al, 2009:5).

2.3.3.6 Rural/Urban

It is contested whether a disparity in depression outcomes exists between rural and urban areas. In China the prevalence of depression was 27% in rural areas and 17.48% in urban areas (Qin, Wang & Hsieh, 2015:11). On the other hand, a study in South Africa using the SASH data did not find disparities in mental health risks between urban and rural areas (Williams et al., 2009:6).

Results from Ardington and Case (2010:7) indicate that although the geographical area type had no influence on the depression scores of the 15-24 age groups, the cohort of the ages 50 and above experienced relatively more depressive symptoms as a result of living in urban informal areas. Hence the effects of poverty related variables such as living in an impoverished area increase depressive scores among adults. Relative to the 15-24 age groups, this effect was more pronounced among the 25-49 group, and the effect was greatest among adults above the age of 50 (Ardington & Case, 2010:7)

2.3.3.7 Physical Health

A study on older adults in South Africa reports that the 12-month depression is positively associated with chronic conditions, functional disability and lower quality of life among older adults. Depressed study participants had a 7.6 times higher odds of having nocturnal sleep issues relative to non-depressed participants (Peltzer & Phaswana-Mafuya, 2013:4). However, poor physical health as a result of an individual's poverty circumstances is also correlated with an increased risk of mental disorders. Co-morbidity is therefore found between physical and mental disorders in studies conducted in low to middle income countries. Both conditions increase health costs for the individual, which further impedes the individual's ability to remain out of poverty or escape poverty (Patel & Kleinman, 2003:4). A bidirectional relationship exists therefore between physical and mental health. Studies by Tomita, Labys and Burns (2015:5) and Ardington and Case (2010:5) find that poorer self-reported general health status increased the odds of reporting depressive symptoms. Ardington and Case (2010:5) further find that poor self-reported health was greatest for the group aged 50 years and above. Moreover, the presence of a chronic condition as well as more difficulties in everyday activities was more common among the group aged 50 years

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and above (Ardington & Case, 2010:5). This indicates that the impact poor physical health had on mental health outcomes may be more pronounced among older adults.

2.3.3.8 The effect of social support on depression

A study on perceived stress and depression in South Africa found that major life events increased depressive symptoms that individuals experienced (Hamad, Fernald, Karlan & Zinman, 2008: 6). Studies in rural China by Liang, Gong, Wen, Guan, Li, Yin and Wang (2012) find that the greater the number of negative life events experienced, the greater the prevalence of depression among adults in rural China. The study reports that 1.67% of people who had experienced no negative events were moderately and severely depressed, whilst 43.80% of people who had experienced three or more negative life events were moderately and severely depressed (Liang, Gong, Wen, Guan, Li, Yin & Wang, 2012: 3). This indicates the adverse psychological impact negative life events can have, which may later lead to depression. With negative life events, social capital is needed in order to cope with adversity and change. A lack of a social support system increases the individual's vulnerability to depression.

Low socioeconomic status, a female gender status, inadequate social support and poor health have been found to increase the vulnerability of older adults to depression. Studies indicate that older adults, who live alone, are more likely to be depressed relative to older adults who do not live alone (Mckinnon, Harper & Moore, 2013: 2). This was attributed to feelings of loneliness that they may be experienced while living alone (Mckinnon, Harper & Moore, 2013: 7). Greater social connectedness is noted to inversely be related to depression (Blechner, 2008: 8). Studies on rural China indicate that depression prevalence rates decrease with higher levels of social cohesion indicating the importance of social capital. One finding showed 14.25% of adults with low levels of social cohesion were moderately and severely depressed (Liang, Gong, Wen, Guan, Li, Yin & Wang, 2012:3). On the other hand, 5.28% of adults with high social cohesion levels experienced moderate and severe depression (Liang, Gong, Wen, Guan, Li, Yin & Wang, 2012:3).

2.3.3.9 Behaviours associated with mental disorders

Mental disorders have varying impacts on the functioning of individuals depending on the disorder. Some mental disorders are more severe than others and some, although less severe, are more prevalent among the population. Findings from Williams et al. (2009:4) indicate that the most common mental disorders experienced in terms of 12-month prevalence were major

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depressive disorder, agoraphobia, and alcohol abuse. Anxiety disorders and substance abuse disorder were the two classes of mental disorders that had the highest occurrence rates. In their study 16.5% of people were found to have at least one form of mental disorder in the previous 12 months. Some people had more than one mental illness. Williams et al. (2009:4) estimated that 70% of people in South Africa had one mental illness. However quite a significant proportion (8%) of the mentally ill population had three or more mental disorders in the previous 12 months. In terms of lifetime prevalence, substance abuse use disorder had the highest lifetime prevalence in South Africa (Stein et. al, 2009:5). Moreover, substance abuse onset at an early age increased in prevalence in younger age cohorts. Substance abuse, particularly alcohol abuse was markedly higher in South Africa than other countries studied by the world Mental Health Survey Initiative. Ukraine was the only country with more alcohol related problems than South Africa among the countries (Demyttenare et al., 2004 as cited in Williams et al., 2009:6). Alcohol dependence was found to have the highest case of serious sufferers among the other mental disorders (Williams et al., 2009:4). That is, 94.8% of people who were alcohol dependent, suffered from the disorders at a serious level. Government should therefore promote substance use prevention initiatives among the youth in South Africa.

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Depression in particular is a significantly disruptive and costly mental disorder. Unipolar-depressive disorder is one of the biggest contributors to lost disability adjusted life years not only among low-to-middle income countries but globally (Hamad, Fernald, Karlan & Zinman, 2008:2). In South Africa depression contributes significantly to the disease burden (Folb et al., 2015: 2). Studies by Peltzer and Phaswana-Mafuya (2013) on depression among older adults in South Africa find that only 4% of the study participants were depressed in the prior 12 months. This was noted to be lower than the estimated prevalence of depression in similar studies on older adults (Peltzer & Phaswana-Mafuya, 2013:4). Prevalence rates across the country may differ, as the studies conducted each decided on different measurement tools which made comparability difficult (Hamad, Fernald, Karlan & Zinman, 2008:2). The CES-D is one of the most commonly used psychiatric scale instruments (Lorant et al., 2003:7). The studies showed the Present State Examination (PSE) and Composite International Diagnostic Interview (CIDI) were the most popular diagnostic schedules used.

2.3.3.10 Measurement tools

Using the 10-item CES-D scale with a threshold of 10 points, a study on the relationship between neighbourhood social disorder and depressive symptoms in South Africa using NIDS data found 21.1% of adults in South Africa to experience significant levels of depressive symptoms. (Tomita, Labys & Burns, 2015:5).

Hamad et al. (2008) also use the CES-D scale to assess depression among adults in South Africa. The study, however, uses the 20-item version rather than the 10-item version used by Tomita, Labys and Burns (2015) and furthermore used a threshold of 16 points. Hamad et al. (2008: 6) found the average depression score to be 18.8 points. The average for both males and females was above the threshold, indicating that the majority of the sample was depressed. Average depression scores for women (19.8 points) were greater than that of men (17.9 points). Interestingly, 5.4% of men exceeded the predetermined threshold whilst 64.5% of women exceeded the threshold. The study further assesses perceived stress using Cohen's Perceived Stress Scale and finds the perceived stress to be higher among women (19.6 points) than men (17.5 points).

The CES-D scale has been used in studies other international studies to assess depressive symptomatology. As seen in the Tomita, Labys and Burns (2015) and the Hamad et al. (2008) studies, various thresholds can be used and some studies may assess more depressive symptoms than others. Studies on China using the CES-D scale were performed by Qin, Wang and Hsieh (2015). As a check for robustness the CES-D scale examining depression was tried using the $22<\text{CES-D}\leq 28$ threshold values rather than the initially used threshold of 20 points. This was done in order to ensure that the findings were comparative to studies using different CES-D cut-offs. The new threshold values did not change the main findings of the study (Qin, Wang & Hsieh, 2015:12). This indicates that various cut-offs may still provide consistent results.

The Beck Depression Inventory used by Liang et al. (2012) is another instrument that may be used to assess depression. The study finds that mild and moderate/severe depression prevalence rates were 9.39% and 10.70% respectively among adults in rural China (Liang et al., 2012:3).

Depression is therefore a mental illness that is particularly prevalent among low to middle income countries and contributes significantly to the burden of disease globally. Particularly in South Africa, both lifetime and 12-month depression rates are markedly high. Consequently, it is critical

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to determine the factors that may lead to the onset of depression as well as aspects that increase the vulnerability of individuals to depressive and depression.

2.4 The Supply Side of Mental Health in South Africa

In the WHO-CSDH framework the health system itself is considered an intermediary social determinant of health. The health system can, however, intervene and be part of correcting health inequities. This can be done through improving health care, engaging with other departments, and reducing the overall socioeconomic barriers to good health. One way of doing this is by making transportation to health facilities more accessible, financially and geographically. The notion of the health system being part of the framework is important as it plays a role in determining social outcomes particularly through the access aspect (WHO, 2010:39).

South Africa has a suboptimal allocation of mental health care resources. Furthermore, at a provincial and national level, no explicit budget for mental health exists (Burns, 2011:104). The WHO-AIMS (2007) report notes that only three out of the nine provinces in South Africa could report on the proportion of their health expenditure that went to mental health. The three provinces were Mpumalanga, Northern Cape and North West. They each spent 8%, 1% and 5% respectively of their health budget on mental health (WHO-AIMS, 2007:8).

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2.4.1 A comparative assessment of mental health treatment

A disturbing trend in South Africa is that 13.8% of people who did not have any form of mental disorder were on mental disorder treatment (Williams et al., 2009:5). This suggests that some of the existing resources are being wasted on adults who do not have mental disorders. Meanwhile, resources appear to be stretched at a supply level (Williams et al., 2009:7). WHO (2005) as cited in (Williams et al., 2009:7) report one psychiatrist, eight psychiatric nurses, four psychologists and 20 social workers for every 100 000 people in South Africa. A study by Semrau, Evans-Lacko, Alem, Auso-Mateos, Chisholm, Gureje, Hanlon, Jordans, Kigozi, Lempp & Lund (2015) on Ethiopia, India, Nepal, Nigeria, South Africa and Uganda, presents interesting findings. The study found that the number of psychiatrists per 100 000 people was 0.04, 0.30, 0.13, 0.12, 0.27 and 0.09 respectively for the above mentioned countries. As mentioned before, South Africa is better off than these other countries in terms of resources. Nevertheless, the country still finds its current resources stretched. In terms of psychiatric nurses per 100 000 people, the figures were 0.59, 0.17,

0.27, 0.60, 9.72 and 0.76 respectively. Per 100 000 people South Africa had 2.7 psychiatric beds in general hospitals. The number of psychiatric beds in general hospitals in Uganda (1.24), Nigeria (0.2), Nepal (1), India (0.82), & Ethiopia (0.04) were even less than in South Africa.

Although dated, a meta-analysis by Kohn, Saxena, Levav, & Saraceno (2004) with selected community surveys describes the treatment gap of various countries. Treatment gaps in Zimbabwe, Brazil and Mexico were 67%, 49.4% and 73.5% respectively. Semrau et al. (2015:4) report an astounding 90% treatment gap in Ethiopia. Besides Ethiopia, the treatment gaps in the above mentioned countries was less than the treatment gap in South Africa of 75% (Bateman, 2014:1). Semrau et al. (2015:3) find that among the low to middle income countries in their study only in Nigeria and Uganda could primary health care nurses independently diagnose and treat mental disorders. This is interesting as South Africa has already moved to a primary based care model, yet the study reports that nurses in South Africa could not independently diagnose and treat mental disorders. It is important to note that limited data is available to do cross-country comparisons on treatment and mental health budgets. In particular, in Africa the few studies that have been conducted on mental health have mostly considered individual countries (Omar, Green, Bird, Mirzoev, Flisher, Kigozi & Lund, 2010:2).

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2.4.2 Treatment in South Africa

Treatment patterns in South Africa indicated that the least likely treatment sector for people with moderate to serious disorders, was the mental health sector. That is, 7.2% of those being treated, were treated by a mental health professional (Williams et al., 2009:5). The majority (72.4%) of moderate to severe cases were not on treatment. Similar patterns were seen for cases of mild severity. It was reported that 4% of sufferers were treated under mental health care out of the 24.4% receiving treatment for mild severity levels (Williams et al., 2009:5). The remaining 75.6% of mild cases were not on treatment (Williams et al., 2009:15). Other treatment avenues included general medicine (not in a mental health setting) and non-health care treatment. Non-health care treatment included treatment administered by religious\spiritual advisors or traditional healers. Both general medicine practitioners and non-health care practitioners were more likely to administer treatment in South Africa than the mental health sector. Education was found to be correlated with treatment (Williams et al., 2009:16).The more educated individuals were, the more likely they were to report receiving treatment. Interestingly, the study suggests that lower income

individuals were more likely to report receiving treatment for mental disorders relative to the high income group (Williams et al., 2009:5).

A lack of mental health treatment was noted to pose a health risk to the general population. Untreated cases of mental disorders had higher risks of contracting HIV/AIDS and passing it on to others. Even though the right to health is a basic human right many do not receive treatment and thus do not fulfill this right (Andersson et al., 2013:2). A further problem with treatment is the miscommunication between the various spheres in the mental health sector, such as hospitals, clinics and pharmacies. Marais and Petersen (2015:19) find that miscommunication in the supply chain of medicines leads to patients not being able to receive their medicine one time, which may subsequently lead to a patient relapsing.

The proportion of those that are mentally ill that are not on treatment is a cause for concern. Only 8.2% of individuals who reported lifetime prevalence of depression had seen a psychiatrist for consultation in the year prior. Fewer men who had a mood disorder used health care in the prior 12 months, relative to women (Herman et al. 2009) as cited in (Andersson et al., 2013:2). In the African context many misconceptions were attached to mental health care which acted as a barrier to people using mental health services (Andersson et al., 2013:2)

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It is noted that 80% of people in South Africa do have free access to psychotropic medicines. Furthermore out-of-pocket payments for antipsychotic medication were found to account for 0.7% of the daily minimum wage. That is 24 cents a day. Generic antidepressants were to account for 0.5% of the daily minimum wage. That is 15 cents a day. This indicates that low-cost treatment is a reality in South Africa. (Lund, Kleintjes, Campbell-Hall, Mjadu, Petersen, Bhana, Kakuma, Mlanjeni, Bird, Drew, Faydi, Funk, Green, Omar & Flisher, 2008:99)

However, do the antidepressants improve the mental well-being of the individual? Or do they cause long-term damage? (Blechner, 2008:1). The over prescription of antidepressants may diminish the significance of psychotherapy and make out depression to be only a biological issue (Blechner, 2008:2). Some people experience negative events that cause them to feel sad and hopeless among other depressive symptoms. The prescription of antidepressants in this case primarily relieves symptoms but without psychotherapy, the underlying issue does not get resolved in an effective manner. This may lead to the over dependence of antidepressant medication among individuals which may have long-term consequences (Blechner, 2008:2).

Cost-effective treatment is able to effectively reduce the mental health burden in South Africa. The various mechanisms through which this takes place includes low-cost antidepressants for sufferers of depression, through antipsychotic drugs for sufferers of schizophrenia and through having a low-cost community-based model for rehabilitating people with chronic mental disorders (Lund et al., 2008:15).

In the case of depression, medication can relieve depressive symptoms but this is not necessarily the most cost-effective approach (Blechner, 2008:5). Over the long-term the cumulative cost of medication in the form of antidepressants may be high since symptomatic relief may not solve underlying issues (Blechner, 2008:5).

2.4.3 Treatment Facilities and Mental Health Policy in South Africa

Mental health services in South Africa were found to still be particularly institutionalised, instead of community-based care, which is the international trend and the goal for government. The problem with institutionalising mental health service and not having sufficient community-based care is that once an individual leaves the institution, they return to a community that lacks the proper systems to support them outside of an institutionalised environment (Lund & Flisher, 2003 as cited in Lund et al., 2008:16). Although the 2002 Mental Health Care Act is a step in the right direction, the implementation of the policy still is a cause for concern. The mental health systems and policy in South Africa are therefore still weak, particularly at an implementation level (Lund et al., 2008:16)

A review of the mental health outpatient facilities in South Africa indicate that out of the 441 psychiatric inpatient units in general hospitals, there were 2.8 beds per 100 000 population (Lund et al., 2008:100). Moreover, only 1.4% of the facilities available in South Africa are for children and adolescents. This is particularly alarming, as Corrigall et al. (2007) identify early childhood and adolescence as critical periods of risk.

Results from the study by Andersson et al. (2013) on the Eastern Cape indicate that, relative to women, more men who were emotionally troubled did not feel the need to seek help. That is, 66% of men and 3.2% of women who were emotionally troubled did not feel the need to seek help. Help-seeking behavior was, however, seen among the majority (95.1%) of study participants who had emotional trouble (Andersson et al., 2013:4). Furthermore, help-seeking behavior was found

to be positively correlated to tuberculosis, as well as positively correlated to having social support (Andersson et al., 2013: 6). More than half, 57% of study participants, who had emotional trouble, actually contacted a health worker (Andersson et al., 2013:7). The study identified one of the barriers to care to be that the study participants perceived that their problem was manageable or that it would disappear by itself. Other barriers include help being sought from other sources, clinical waiting times being long, and embarrassment over their illness. Although the majority (80-90%) of the respondents with lifetime depression, who sought health care, were satisfied with the service, concerns may be raised about the 12% who had bad experiences due to 'negative attitudes' of staff. 'Negative attitudes' were further elaborated upon and described as being judgemental towards the patient because of their disorder, and a lack of empathy/compassion which can be summarised as mistreatment and not being treated fairly (Andersson et al., 2013:7).

Although overall help-seeking behavior was high among people in the Eastern Cape, men exhibited less of this than women when experiencing emotional trouble (Andersson et al., 2013:8). This effect among men was more pronounced in rural/semi-rural areas relative to urban areas. This difference was, however, not found among women and in general, disparities of a geographic nature with respondents seeking help was not found. Study participants aged 18-29, particularly those with low incomes, were less likely to seek help (Andersson et al., 2013:1). The study also identified barriers to health care, of which 40% were associated with stigma (Andersson et al., 2013:8).

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South Africa's Mental Health Care Act legislates community-based mental health services due to the flexibility with which individuals can receive care and be engaged in their community under this kind of approach to mental health services (Lund et al., 2008: 170). It is intended that patients, who are institutionalised, do not stay there for prolonged periods but instead return to their communities and are able to access support systems that promote recovery to prepare them to return to work (Lund et al., 2008:170). It is noted that the implementation of this aspect of the Act in terms of deinstitutionalisation has been for the wrong reasons (downsizing) and the achievement of objectives relating to the development of community-based outpatient mental health services have been inadequate (Lund et al., 2008:170). One of the problems associated with this failure is greater pressure being placed on an already resource constrained primary health care sector. This view was argued among (Lund et al., 2008:166) respondents, who stated that in practice the

integration of mental health with general health would severely stretch human resources at a primary care level (Lund et al., 2008:166). Marais & Petersen (2015:9) also find a lack of human resources and an insufficient budget to employ more workers as a serious constraint on the mental health. Unfortunately in South Africa, the mental health professionals, who do exist, mainly serve the urban population. In China, the high prevalence rates of depression in rural areas was argued by Qin, Wang and Hsieh (2015:19) to be a reason for government to establish more primary care facilities in those impoverished areas.

Furthermore, concerns regarding the level of expertise in mental health at a primary care level were expressed (Lund et al., 2008:167). This is because the community health workers do not have the skill set to provide community-based mental health services (Marais & Petersen, 2015:9). Integration would mean less stigma, as mental health care patients would not have to go to special facilities, but would attend general hospitals like everyone else (Lund et al., 2008:166). This can be seen in studies in China where Chinese populations were found not to be seeking attention for mental health problems and when they did it was in a general hospital rather than a specialised facility (Liang et al., 2012:4)

It is argued that the overall cost of integration would be patients receiving lower quality, less specialised care, inter alia, which was not worth the benefit (Lund et al., 2008: 168). In particular, people with mental disorders may suffer from mistreatment/feeling as if they are not valued by busy hospital workers. (Lund et al., 2008:168). Proponents, however, argue that the integration of mental health care into primary health care is still needed as well as the deinstitutionalisation of mental health care. In fact, it is part of the Department of Health's National Mental Health Policy Framework and Strategic Plan for 2013-2020, which is slowly being implemented. Marais & Petersen (2015:2) suggest integration to be important, as existing studies[1] [2] [3] find integration can viably treat common mental disorders such as depression.

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[1] *Patel V, Thornicroft G. Packages of care for mental, neurological, and substance use disorders in low- and middle-income countries: PLoS Medicine Series. PLoS Med. 2009;6(10):1–2.*

[2] *Patel V, Belkin GS, Chockalingam A, Cooper J, Saxena S, Unu tzer J. Grand Challenges: Integrating mental health services into priority health care platforms. PLoS Med. 2013;10(5):1–6.*

[3] *WHO. Integrating Mental Health into Primary Care: A Global Perspective. Geneva: WHO; 2008.*

Overall some challenges of mental health policy include: low priority given to mental health, not enough public awareness of mental health, the entangled link between poor mental health and poverty, and the impact stigma has as a barrier to progress in key mental health objectives (Lund et al., 2008:186). Policymakers need to be aware of these challenges and contextual constraints such as poverty, HIV/AIDS, unemployment ad difficulties in establishing cohesiveness between local government, civil society and people in the communities in tackling the mental health problem (Lund et al., 2008: 185). The study finds that, although policy has been put in place, the major issue is the lack of policy implementation years after legislation. Furthermore, developmental issues the country faces in the form of contextual issues also play a role in affecting mental health of the South African population.

2.4.4 Possible interventions

Patel & Kleinman (2003) suggest preventative measures in their study. These include: improving the socioeconomic well-being of children through nutrition and education interventions, governments ensuring more financial lending security for the poor as well as working towards reducing debt related stress. Corrigall, Ward, Stinson, Struthers, Frantz, and Lund (2007:7) suggest a number of preventative measures for South Africa that focus on at-risk groups. At-risk individuals were characterised as unemployed/underemployed, women (depression and general anxiety disorder), men (substance abuse), individuals living in poverty, single parents, people with chronic disorders, and refugees. In addition, areas of intervention were identified based on prior studies. The modalities of intervention were further developed based on the at-risk groups, areas of intervention and evidence from previous intervention programmes. Some of the proposed interventions included; restricting the advertisement of alcohol and substantially increasing the cost of purchasing alcohol in order to reduce substance abuse, monitor existing poverty-alleviation interventions and increase access to social assistance in order to reduce multiple deprivation (Corrigall et al., 2007:9), to integrate mental health services into general medical health services and hire more mental health professionals at outpatient facilities and general hospitals that are dedicated specifically to mental health in order to improve the supply-side of mental health (Corrigall et al., 2007:10).

Interventions are required to improve collaboration between various departments within government. Specifically more role clarification and collaboration is needed between the

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Department of Health and the Department of Social Development. This will ensure that each department knows its responsibilities with regard to mental health care, which seems to be the current problem (Marais & Petersen, 2015: 8). Further interventions on the supply side should focus on improving the quality of mental health care and reducing treatment costs, as these are further implied to assist in improving mental health (Patel & Kleinman, 2003:4). Qin, Wang and Hsieh (2015), who identify links between depression and socioeconomic variables, suggest interventions that reduce the socioeconomic inequalities, which have contributing effects on improving mental health outcomes. They further argue that government ought to be more involved in the treatment and prevention of mental disorders (Qin, Wang & Hsieh, 2015:19).

2.5 Conclusion

This chapter reviewed the existing literature on mental health and socioeconomic status. The theoretical approach that will be followed for this study is the pathways approach, in particular Figure 2-5, which illustrates the WHO's CSDH approach. The reason for this using this framework for the study is because the empirical literature points to a number of social determinants that influence a person's mental well-being and can lead to depression. In the South African context this is especially useful because it is a developing country with a host of social issues. A variety of studies have considered aspects of the CSDH framework and perhaps focused on a particular section of the framework, for example, only on socioeconomic status. If studies do not consider biological and environmental aspects in addition to social capital's role as a determinant of depression, the problem of depression will not be properly contextualised. Moreover, without considering all the aspects mentioned above, interventions on the part of government will not effectively target individuals who experience the greatest degree of depressive symptomatology. Therefore the study will make use of the CSDH approach. The manner in which this approach will be employed will be discussed in the next section.

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Chapter 3 : Methodology

3.1 Introduction

The study looks at the impact of socioeconomic status as one of the broader social determinants of depression in South Africa. This chapter will begin with a discussion of the theoretical model used in the study, as well as a specification of the empirical model that will be used to make estimations. The theoretical model will be selected from the approaches discussed in the literature review. The empirical model will include a specification of the model as well as the variables that will be examined in the analysis. In the following section, we will discuss the data as well as problems attached to using the data. Data from the National Income Dynamics study was used to conduct analysis. Lastly, a summary of the chapter will be provided.

3.2 Theoretical Model

Over the years there have been various models that have linked socioeconomic status to health outcomes. This study employed use of a theoretical model that follows the theoretical standpoint of the WHO-CSDH framework. The application of the framework will be used in a similar manner to the study by Liang et al. (2012) on rural China, but with adjustments. The CSDH (2007) framework encompasses what will be discussed next in terms of the steps in which the framework is applied.

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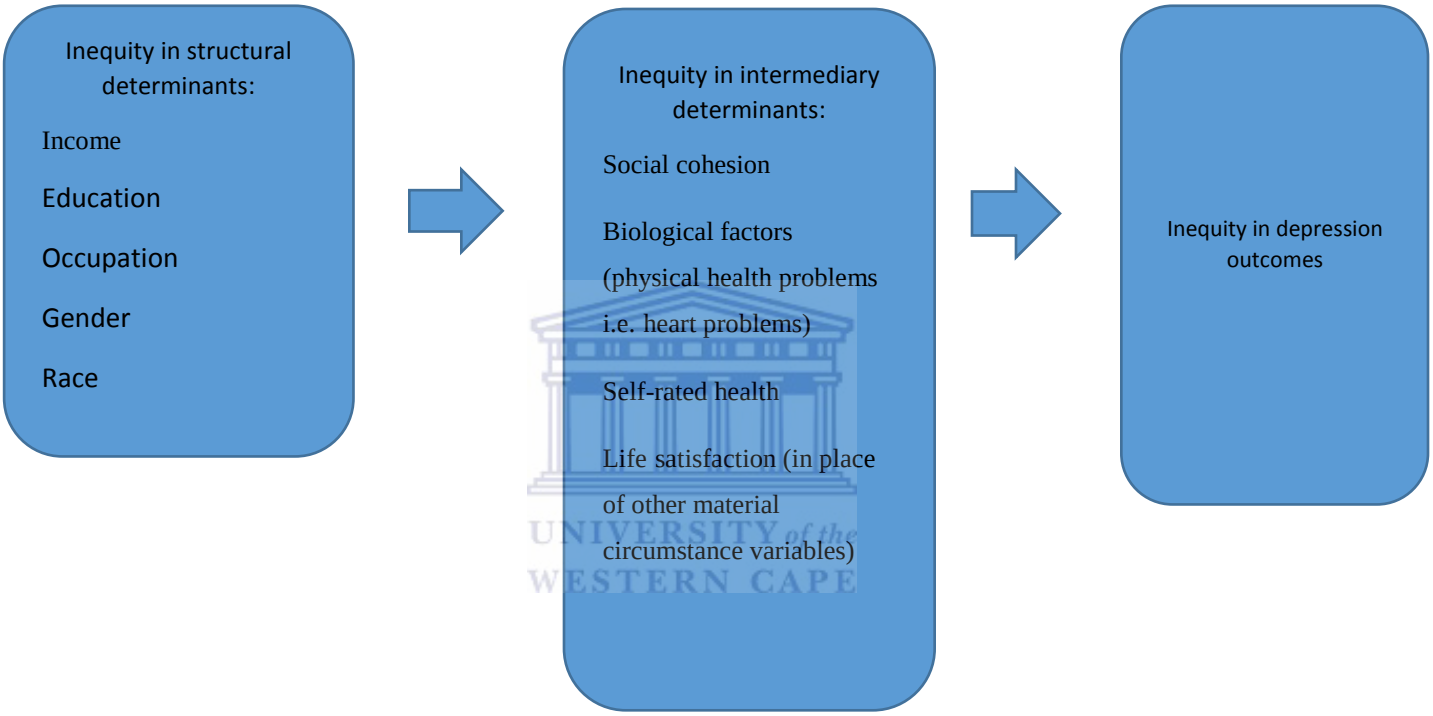
The first step was to identity the social determinants of mental health; in particular, depression. These were: i) Income ii) Education iii) Occupation iv) Gender v) Race

These determinants are known as structural determinants. The structural determinants do not directly impact on depression but instead they affect the intermediary determinants. The next step was to investigate whether the social determinants impacted on inequities in mental health, in particular, depression. This was done through assessing whether adults in South Africa with varying income, education, occupation, gender and race, have differential depression prevalence rates. Are certain populations more likely than others to be depressed? Is depression more likely for people working in elementary occupations? These questions were answered by means of regression analysis.

Finally, the study identified the mechanisms through which the social determinants of depression generate inequities. This relates to the intermediary determinants of depression. The study assessed the following intermediary determinants: i) Social cohesion Biological factors (physical health problems i.e. heart problems) ii) Self-rated health iii) Life satisfaction (in place of other material circumstance variables)

Figure 3-1: Flow diagram on the determinants of depression



Source: Adapted from WHO-CSDH (2010)

The flow diagram above indicates the flow inequity from the structural determinants to inequity in the intermediate determinants to inequity in the final depression outcomes. From these results the study was able to relate problem areas to policy entry points for government intervention.

3.3 Empirical Model

3.3.1 Empirical model specification

The empirical model is derived from the theoretical model. The empirical model was used for estimation based on explanatory factors determined in our theoretical model.

The model can be specified as follows:

$Y_{it} = \alpha_i + x_{it}\ \beta + \mu_{it}$ (i=1,……N ; t=1,…..T)

The endogeonous variable Y is denoted by Y_{it}. Where the subscript i refers to the ith observation and the subscript t refers the time which entity i is observed. Y is also a vector of the depression scores obtained from the 10 CES-D questions posed in the questionnaire. The individual effect is denoted by α_i. The variable x_{it} denotes a host of factors that affect the depression score e.g. age, educational attainment, social cohesion etc. The model assessed the link between depression and these factors. The random error term μ_{it} is assumed to follow a standard normal distribution. We also not that signs of the β coefficients only indicate the effect the dependant variables have on the probability of experiencing depressive symptomatology.

Depression, the dependent variable was considered a dichotomous endogenous variable. The variable takes on a 1 or a 0, depending on whether the person is depressed or not based on a CES-D score which exceeds 10[4]. The endogenous variable is a dichotomous variable, which indicates that some form of probability model is to be employed. The linear probability model has limitations including; the model does not bind the estimated variables between 0 and 1 (Gujarati, 2004:584). The model assumes linearity, which means that some estimates may indicate probabilities greater the 1 or less than 0. Probit and logit models are possible alternatives to the linear probability model. The choice between the two models is an author's personal choice. The study used a probit model to estimate the probability of being depressed. The probit model will bind the estimates between 0 and 1. The model was run using the statistical package, STATA, to make estimations.

To recap, the endogenous and exogenous variables used in the model can be specified as follows:

- Outcome variable: Depression (using CES-D scores)
- Explanatory variables: Age, Log Per Capita Income, Educational attainment, Occupational status (Using Occupational code), Female, Black, Coloured, Asian (Asian/Indian), Negative life events, General health status (self-reported), Geographical area type, Marital status, Social cohesion (Trust).

[4] The CES-D depression tool will be elaborated upon in section 3.3.2

3.3.2 Outcome variable

The outcome variable that was estimated is depression/ significant depressive symptoms. Depressive symptoms were assessed using the 10-item version of the Centre for Epidemiological Studies Depression Scale (CES-D). The scale measures depressive symptomatology in the population. The cut off that was used was a score of 10 or higher which would indicate the occurrence of significant depressive symptoms. These are the scales used both in Tomita et Al. (2015) and Ardington and Case (2010) to analyse depression in the NIDS dataset. Lorant et al. (2003:7), who conducted a meta-analysis on 56 different studies on depression, found that CES-D was the most commonly used psychiatric scale instrument among the studies conducted. In fact, both the 10 and 20-item versions of the CES-D scale are widely used in studies assessing depressive symptoms and depression. The questions in the CES-D 10 used for this study are ranked on a 4-point Likert scale in which the respondent can indicate how frequently they experienced a particular depressive symptom. They can either select, 'Rarely or none of the time' (less than 1 day), or 'Some or little of the time' (1-2days), or 'Occasionally or a moderate amount of time' (3-4days), or 'All of the time' (5-7days). The table below displays the questions that are asked in the questionnaire, known as the 10-item version of the CES-D.

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Table 3-1: CES-D-10 questions

Section K: Emotional health

INTERVIEWER READ OUT: We would like to know how your general well-being has been over the past week.

I am going to read a list of some of the ways you may have felt or behaved during the last week. Using the showcard, please indicate how often you have felt this way during the **past week.**
Interviewer: Circle one number on each line

	During the past week...	Rarely or none of the time (less than 1 day)	Some or little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	All of the time (5-7 days)
K1	I was bothered by things that usually don't bother me	1	2	3	4
K2	I had trouble keeping my mind on what I was doing	1	2	3	4
K3	I felt depressed	1	2	3	4
K4	I felt that everything I did was an effort	1	2	3	4
K5	I felt hopeful about the future	1	2	3	4
K6	I felt fearful	1	2	3	4
K7	My sleep was restless	1	2	3	4
K8	I was happy	1	2	3	4
K9	I felt lonely	1	2	3	4
K10	I could not "get going"	1	2	3	4

Source: NIDS questionnaire

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Table 3-2 below indicates the manner in which the study scored depression using the CES-D scale. Miller, Anton and Townson (2008) find the internal consistency for the CES-D-10 to have a Cronbach's α=0.86. Furthermore the test-retest reliability for the CES-D-10 was equivalent to (I CC=0.85). Lastly the test-retest reliability for individual items was measured as (ICC=0.11-0.73). This confirms the reliability of the CES-D-10 scale in measuring depression. Miller et al. also report the validity of the tool as having a convergent validity = .91 and a divergent validity = .89. This confirms the validity of the CES-D-10 tool in measuring depression.

Table 3-2: CES-D-10 scoring

Scoring	Rarely of none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	All of the time (5-7 days)
Questions 5 & 8	3	2	1	0
All other questions	0	1	2	3

Source: *www.brandeis.edu/roybal/docs/CESD-10_website_PDF*.

3.3.3 Explanatory variables

The explanatory variables in the regression include: educational attainment, occupational status, and number of negative life events, log per capita income, race, age, and gender, place of residence /geographical area type, self-reported general health, marital status, and social cohesion.

Educational attainment, log per capita income and occupational status are included in this empirical model, as they are the three variables that make up socioeconomic status. The study includes race and gender as they are also part of the structural determinants of depression and therefore may prove useful in estimating inequities in depression outcomes. Age and self-reported health are in the model, as they are biological determinant of depression. Marital status is also included as it will assist in understanding whether the social support of a spouse is likely to protect against depressive symptoms. Lastly, social cohesion and geographical area type are spatially important as they determine the type of community that an individual resides in, which plays a role in determining how vulnerable one is to depressive symptoms.

Occupational status was measured using occupational codes. The higher the occupational code, the higher the job is on the workplace hierarchy. Table 3-4 below describes occupational codes by skill levels. The table is set according to the South African Standard Classification of Occupations (SASCO) taken from Statistics SA and based on the United Nations' International Standard Classification of Occupations (ISCO-1988) (Girdwood & Leibbrandt, 2009:9).

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Table 3-3: Occupational codes and skill levels

	Major Group	Skill Level
1	Legislators, senior officials and managers	4
2	Professionals	4
3	Technicians and associate professionals	3
4	Clerks	2
5	Service Workers and shop and market sales workers	2
6	Skilled agricultural and fishery workers	2
7	Craft and related trades workers	2
8	Plant and machinery operators and assemblers	2
9	Elementary occupations	1
0	Armed forces and unspecified occupations	1

Source: NIDS questionnaire

Per capita income was calculated by dividing household income by household size. The income values used were those after imputations. Furthermore, per capita income and educational attainment were included in the probit regression as continuous variables. Self-reported general health status is self-assessed by the individual being interviewed on a 5-point Likert type scale. The outcomes range from excellent (1) self-reported health status to poor (5) self-reported health status. This variable was also assessed as a continuous variable. Appendix A indicates how the race, gender and place of residence variables were assessed, as well as which groups were left out as the reference group. Social cohesion was measured by considering whether an individual trusts that either a neighbour or a stranger would return a wallet containing R200.

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3.3.4 Analysis of empirical model

The initial primary analysis that took place in this study was descriptive and focused on socioeconomic status. Cross-tabulations and largely descriptive statistics were used in order to assess the prevalence and distribution of depression in South Africa. Hence, this section was pertinent to meeting the first research objective. The results of this sub-section should indicate whether there are inequities in depression outcomes across racial, gender, age and geographic distributions.

Secondary analysis took place by means of regression analysis in order to investigate exactly which depressive symptoms are linked to different groups. This would reveal possible problems that are experienced by vulnerable groups, such as if fear is the reason women are more likely to be depressed, and this may reveal a possible area for intervention by government. Going forward

with this example, community violence, domestic violence and the prevalence of rape may be areas of concern that have linkages to the mental health of women. By government addressing the structural problems such as poor policing, the direct problems may be resolved, which may lead to fewer depressive symptoms. This is the aim of this research and hence why the study elected to use the WHO-CSDH framework.

Lastly, a robustness check was conducted by assessing the prevalence and distribution of depression using a cut-off of 15 points as recommended by Björgvinsson, Kertz, Bigda-Peyton, McCoy & Aderka (2013:434). The purpose of this robustness check was to assess whether the results of the study are valid and to check if the main findings of the study will remain the same if different thresholds were used.

3.3.5 Panel data issues

There are a number of benefits in using panel data over cross-sectional or time-series data in this thesis. According to Gujarati (2004:637) the heterogeneity associated with panel data is taken into account by panel data estimations allowing for individual-specific variables. Panel data also allows for more efficiency and informative data as it combines cross-sectional and time-series data (Gujarati, 2004:637). Lastly, panel data allows for researchers to investigate varying dimensions associated with change (Gujarati, 2004:638). Accordingly, the use of panel data was particularly beneficial to the study as we were able to track the depressive symptomology of individuals over a number of years. This allowed us to make use of transition matrices and identify chronically depressed individuals. Overall inference for the study was much informative as we could see how changes in the social and intermediate determinants of depression affected subjects over time.

There are two types of panels, a balanced panel and an unbalanced panel. In a balanced panel the number of cross-sectional observations equal the number of time-series observations. This is not the case in an unbalanced panel, where each panel member does not have an equal number of collected observations.

A problem that is faced in panel data is that of autocorrelation. OLS models assume no autocorrelation, which is implausible and not a realistic assumption for panel data. Another problem faced by researchers when using panel data is that of unobserved heterogeneity. The problem of the explanatory variables being correlated with the individual effects, if not resolved,

will lead to inaccurate estimates. In panel data the explanatory variables may be correlated with the individual specific variable. There are different approaches to estimating using panel data. The researcher can either use a fixed effects model, a first difference model or a random effects model. Using a fixed effects model and taking the first difference of a fixed effect estimator takes care of the problem of the individual specific variable being correlated with the explanatory variables (Cameron & Trivedi, 2009:260).

The Hausman (1978) specification is conducted in order examine whether the unobservable individual effects are random or fixed. Below we therefore run a hausman test to examine whether a random effects regression is well specified. The null hypothesis of the test is Cov (x_{it}, α_i) = 0 i.e. that the individual effects are random and the alternate hypothesis Cov (x_{it}, α_i)≠0. According to the p-value of 0.1279, we do not reject the null hypothesis. The random effects model is therefore well specified and will be used for estimation.

Table 3-4: Hausman Test

Test Summary	Chi-Squared Statistic	Probability
Random effects	33.13	0.1279

Source: NIDS (authors own calculations)

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3.4 Data

Data from the National Income Dynamic Study (NIDS) was used in the study. NIDS was carried out by the South African Labour and Development Research Unit (SALDRU). The sample was drawn from 400 primary sampling units (PSUs). So far there have been four waves of the NIDS study; wave 1 (2008), wave 2 (2010-2011), wave 3 (2012) and wave 4 (2014-2015). The data used in this study was from all the waves of NIDS, but the panel analysis only considered waves 1 and 4 of NIDS. This was done in order to assess differences in the socioeconomic status and depressive symptomatology of adults over significant time period in terms of duration. This allows the researcher to review the transition of adults into and out of depression as well as the socioeconomic mobility of adults in South Africa. The waves were assessed in a panel in which individuals were tracked from wave 1 to wave 4.

Other datasets that have been used in studies pertaining to mental health in South Africa include the Agincourt Integrated Family Survey of 2002 and 2004. This dataset was not used for this study

mainly because it is quite dated and it would not take into account the changes in mental health since 2004. The General Household Survey (GHS) asked whether a healthcare worker had told the individual that they were depressed/ had a mental illness. This would have been particularly useful in terms of being able to make more valid conclusions on depression in South Africa. However, this question was asked only in 2014. In prior years, mental illness/depression status was self-reported.

The NIDS dataset offers a nationally representative sample which has both individual and household level data. NIDS has four different questionnaires that it distributes; an Adult, Proxy, Child and Household Questionnaire. For the purpose of this study most of the data used will be from the Adult questionnaire. The Adult questionnaire is administered to individuals 15 years and older. This questionnaire includes a sub-section on emotional health, which- includes questions pertaining to the frequency of depressive symptoms experienced by adults.

Data for wave 1 of NIDS was collected between the periods February 2008 and December 2008. Wave 4 data was collected between the periods September 2014 and August 2015 (Chinhema, Brophy, Brown, Leibbrandt, Mlatsheni & Woolard, 2016:26). The non-response rate for NIDS from waves 1 to 2 was 19%. From waves 2 to 3 the non-response rate was lower at 16% (De Villiers, Brown, Woolard, Daniels & Leibbrandt, 2013: 26). This is a positive finding as it means that more people were successfully interviewed from waves 2 to 3. Interestingly, 78% of the people successfully interviewed in wave 1 were successfully interview in wave 4 (Chinhema, Brophy, Brown, Leibbrandt, Mlatsheni & Woolard, 2016:7). Non-response is important especially for panel analysis. If respondents initially interviewed do not respond in a subsequent wave, researchers are unable to report results for the individual. If non-response occurs more among particular groups relative to others, the overall findings of the study will be biased.

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The attrition problem is more common among certain racial groups, namely the white and Asian/Indian groups. This can affect the plausibility of making accurate inferences from the sample for these populations. Table 3-5 below indicates that the overall attrition rate in wave 2 was 21.95%. In wave 3 the proportion decreased to 15.82% and in wave 4 the attrition rate further declined to 13.75%. A consistent characteristic of the attrition is an overrepresentation of the white population in the attrition rate. Whilst the overall attrition rate declined from waves 3 to 4, the attrition rate for the white population in fact increased from 50.31% to 53.47%. That is, more than

half of the white population who were interviewed successfully in a particular wave was not successfully interviewed in the subsequent wave. Asians also contributed significantly to the attrition rate. In fact the rate of increase in attrition was highest among Asians from waves 3 to 4.

Table 3-5: Wave on wave attrition by race

	Pop. Group	Refusal	Non-Contact	Deceased	Total	Attrition rate
Wave 4	African	1 410	1 487	718	3 615	10.97
	Coloured	418	368	120	906	16.41
	Asian/Indian	117	86	10	213	42.94
	White	348	456	35	839	53.47
	Total	**2 293**	**2 397**	**883**	**5 573**	**13.75**
Wave 3	African	1 309	1 737	581	367	13.22
	Coloured	483	281	97	861	18.21
	Asian/Indian	122	41	5	168	36.36
	White	504	208	25	737	50.31
	Total	**2 418**	**2267**	**708**	**5 393**	**15.82**
Wave 2	African	1 200	2 189	738	4 127	18.59
	Coloured	554	465	102	1 121	26.93
	Asian/Indian	135	32	8	175	40.79
	White	538	207	28	773	53.94
	Total	**2 427**	**2 893**	**876**	**6 196**	**21.95**

Source: Chinhema, Brophy, Brown, Leibbrandt, Mlatsheni & Woolard (2016:10)

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The attrition rates could significantly affect the results of the study. Between waves individuals who are successfully interviewed again are not surveyed randomly which leads to an attrition bias. The attrition bias that exists because of non-random attrition between waves necessitates the use of panel weights to correct for this bias. The panel weights that will be used in this study are meant to reduce the effect of attrition over the waves. A probit model was run to estimate the probability of an individual being an attritor or a non-attritor. The results of the probit in appendix indicated whether attrition was random or non-random.

3.4.1 Attrition on Depression

Of the total sample of 31 250, 13 676 individuals answered the depression questions in wave 1. Of the 13 676 individuals that answered the wave 1 question, 9 289 had answered the depression questions in wave 4 as well and are therefore our non-attritors. The remaining 4 387 are the attritors as we do not have information for them for wave 4. The attrition rate for the depression variable is therefore 32.08%.

Below are some important points on attrition on depression in this data.

- All 9 289 non-attritors filled out the adult wave 4 questionnaire.
- Of the attritors, 2 842 individuals were administered the adult questionnaire.
- The proxy questionnaire was filled out on behalf of 498 attritors.

Table 3-6: Reasons for attrition

Reasons for attrition	Attrition
Successfully Interviewed	50
Refused/Not Available	187
Household Level Non-Response	1 163
Not Tracked in Wave 4	848
Moved outside of SA	7
Deceased this wave	569
Total	**2 842**

Source: NIDS 2008 and 2014/2015 (authors own calculations)

Since the depression questions were not asked in the proxy questionnaire, all adults who had a proxy questionnaire answered on their behalf, will be considered as attritors in this study. One thousand and sixty-five attritors were deceased in a prior wave. The table below assists in identifying the reasons for attrition in the sample. Household level non-response was the largest contributor to attrition in the sample followed by individuals not being tracked in wave 4. Below is the attrition probit on depression. This assesses if attrition is associated with depression. If this is true, study estimates will be biased. The regression tests whether attrition is random or non-random for the depression variable.

Table 3-7: Attrition probit on depression

Explanatory variables	dF/dx	Std Error
Age	-0.0181***	0.0065
Age squared	0.0002**	0.0001
Negative life events	-0.0586	0.0606
Race		
African	1	
White	0.2532***	0.04442
Coloured	-0.0458	0.0325
Asian/Indian	0.1413***	0.0544
Geographical Area type		
Rural	1	
Urban	0.0291	0.0300
Perceived Health status		
Excellent	1.0000	
Very Good	-0.0194	0.0277
Good	-0.0555*	0.0319
Fair	0.0280	0.0498
Poor	-0.0250	0.0802
Gender		
Male	1	
Female	-0.1068***	0.0239
Socioeconomic status		
Occupational code	-0.0052	0.0142
Log per capita income	0.0658***	0.0177
Log educational attainment	-0.1126***	0.0381
Trust neighbour		
Not likely	1	
Likely	-0.0307	0.0356
Trust Stranger		
Not likely	1	
Likely	0.0250	0.0427
Number of Observations=1855		
Pseudo R-squared=0.0586		

Source: NIDS 2008 and 2014/2015 (authors own calculations)

***Significance at 1% **Significance at 5% *Significance at 10%

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The regression above indicates that attrition is a problem. The study rejects the null hypothesis that attrition is random. A link therefore exists between depression and attrition in Age, Age-squared,

White, Asian/Indian, a ‘good’ self-rated health status, Female, Log per capita income and log educational attainment.

The study restricted its analysis to individuals at least 18 years of age and older in wave 1. The sample consists of 7 290 households in wave 1 and 11742 households in wave 4. In terms of gender, 43.39% of the adults were males and 56.61% females in wave 1. In wave 4, 46.57 % of the adults were males and 53.43% females. The racial distribution of the sample is as follows: 75.77% were African, 9.43% were coloured, 2.86% were Asian/Indian and 11.94% were white in wave 1. In wave 4, 77.60% were African, 9.32% were coloured, 2.89% were Asian/Indian and 10.19% of the sample were white. The sample size for the Asian/ Indian group is quite small. Hence the researcher cautions results from the study that relate to the Asian/ Indian population race group as inference from the sample may not be an accurate reflection of the population.

The data can further be described in terms of the geographical areas in which individuals lived. This may be viewed in terms of provinces as well as in terms of the geographical surroundings which describe whether a location is urban, a farm area or a traditional area. Geographical locations may change over the waves in a panel as people may migrate from one geographical area to another. Hence, two tables below have been included, which describe the provincial distribution of the sample in wave 1 and wave 4 followed by the geographical type of area individuals in the sample resided in wave 1 and wave 4. Gauteng (roughly 28%) and KwaZulu-Natal (roughly 20%) have the largest proportions of participants in the sample. The Northern Cape (roughly 3%) has the lowest proportion of participants in the sample. It can be noted that changes in the provincial distribution of the sample were relatively small over the 6-7 year period (2008-2014/2015).

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Table 3-8: Provincial distribution of sample in wave 1 and wave 4(%)

Wave 1		**Wave 4**	
Provinces	**Percentages**	**Provinces**	**Percentages**
Western Cape	12.44	Western Cape	12.44
Eastern Cape	11.10	Eastern Cape	11.38
Northern Cape	2.65	Northern Cape	2.57
Free State	5.47	Free State	5.17
KwaZulu-Natal	18.36	KwaZulu-Natal	19.57
North West	5.72	North West	5.10
Gauteng	27.40	Gauteng	27.02
Mpumalanga	7.85	Mpumalanga	8.11
Limpopo	9.00	Limpopo	8.65

Source: NIDS 2008 and 2014/2015 (authors own calculations)

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The table below describes the geographical distribution by geographical area type. The majority of the sample resided in urban areas followed by traditional areas. The geographical area that had the least proportion of representation in the sample was farms. Comparing the waves, a clear decrease in the proportion of people living in traditional and farm areas can be seen. On the other hand, there was an increase in the proportion of people living in urban areas that participated in the study.

Table 3-9: Distribution of sample by geographical area type (%)

Wave 1		**Wave 4**	
Geotype	**Percentages**	**Geotype**	**Percentages**
Traditional	28.94	Traditional	29.83
Urban	65.35	Urban	65.77
Farms	5.71	Farms	4.40

Source: NIDS 2008 and 2014/2015 (authors own calculations)

3.4.1.1 Accounting for survey design and non-response

Not all observations have an equal probability of being selected. Some observations may have an increased probability of being surveyed than others. A selectivity bias may occur when dealing with survey data. If the survey design is not taken into account, the coefficients and standard errors may offer biased estimates. We therefore declared our survey design for the dataset. The chosen

cluster, strata and weight was w1_cluster, w1_dc2011, and w4_pweight respectively. We also only considered adults who responded to the depression questions in both waves 1 and 4, to correct for non-response.

3.5 Limitations

It is important to note that there are limitation that are attached to using NIDS data for this study. Firstly, the self-reported nature of the depressive symptoms may lead to some biases in the results. The study admits that only a mental health professional can offer a reliable diagnosis of depression or any other kind of mental health. The CES-D scale is a tool used to assess depressive symptomatology that is linked with depression. According to Chatterji & Markowitz (2012) as opposed to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) used in others studies, the CES-D scale may be used for screening depression not diagnosing depression. The scale however does indicate which respondents, and how frequently respondents experienced depressive symptoms within the past week. The second limitation of using NIDS is that depression is the only mental illness that can be assessed using the dataset. More severe and debilitating mental disorders such as schizophrenia or bipolar disorder cannot be discussed using the NIDS data because questions pertaining to those disorders were not included.

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Ethics statement

The study used secondary data from NIDS, and, therefore, did not include any human subjects. Furthermore, data from NIDS was accessed from the DataFirst[5].

3.6 Summary

This chapter described the methods by which the study would be conducted. NIDS data was selected as the data source for the study. Despite limitations associated with the CES-D 10 which is the instrument used to measure depression/depressive symptomatology, the tool is still valid and will be used in the study. In the next chapter, descriptive statistics and cross-tabulations will be included to describe findings from the data. In addition, a random effects probit regression model will be used for regression analysis in order to understand which socioeconomic variables are associated with depression. This will be performed in a balanced panel.

[5] www.datafirst.uct.ac.za

Chapter 4 : Depression Trends in South Africa

4.1 Introduction

This chapter will present the empirical findings of the study. The chapter will analyse the trends on the prevalence and distribution of depression in South Africa. The chapter is split into three subsections. The first subsection assesses the prevalence rates of depression between 2008 and 2014/2015. This will include an analysis of the depressive symptoms experienced by adults in South Africa. The aim of this is to understand which depressive symptoms are experienced at a greater frequency level relative to the others. In addition, the subsection will also include an econometric analysis of the depressive symptoms experienced by each population gender and race group in South Africa. The econometric analysis will be conducted in a balanced panel. The second subsection is composed of a descriptive analysis of the CES-D scores by age, gender, race, physical illness and alcohol consumption will be discussed next. The chapter will culminate with a description of the distribution of depression across South Africa in terms of geography in the final subsection. The first objective of the study will be met through the three subsections below.

4.2 Depression prevalence

Depression is assessed in this next section. Depression firstly is shown in terms of the whole population. However, since previous studies indicate inequality in depression outcomes, various social determinants of health are assessed in association with depression in order to better establish how depression is distributed in South Africa.

Figure 4-1 below depicts the proportion of adults depressed in South Africa (wave 1-4) (%)

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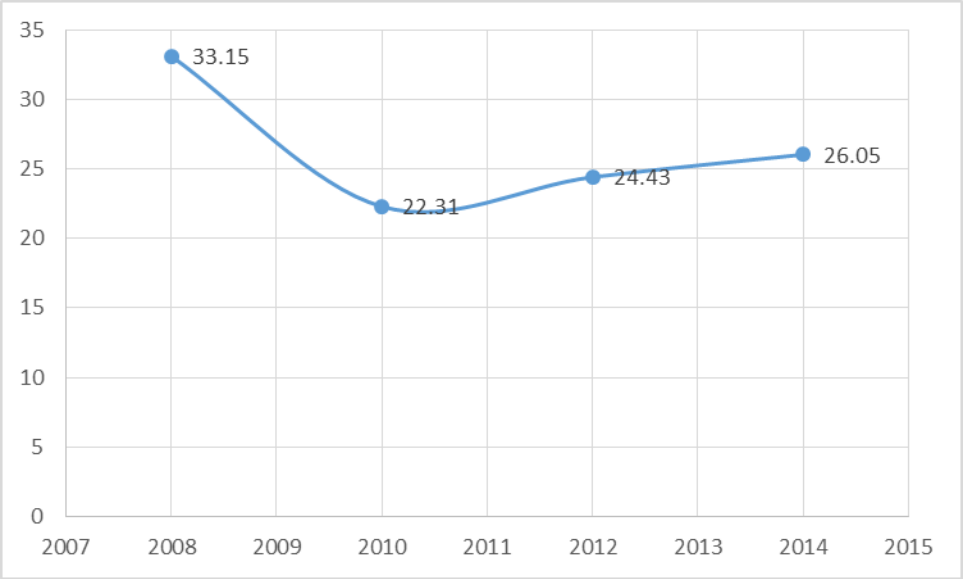
Figure 4-1: Proportion of adults depressed in South Africa (wave 1-4) (%)



Source: NIDS 2008, 2010, 2012 and 2014/2015 (author's own calculations)

The line graph above illustrates the patterns of depression in South Africa over the four waves of NIDS. The CES-D 10 tool of measuring depressive symptomatology was used with a threshold of 10 in place. The proportion of the population that was depressed initially declined drastically but in recent years has been steadily increasing. From wave 1 to wave 2[6] the proportion of people depressed declined by 10.84%. From wave 2 to wave 3 there as an increase of 2.12% in the proportion of adults who were depressed. A further increase of 1.62% can be seen in the proportion of people depressed from wave 3 to wave 4. Overall depression markedly declined from wave 1 to wave 4 by 7.1%. This is a positive finding considering our starting point of 33.15% in 2008. However, 26.05% (roughly a quarter) of the adult population in South Africa were found to experience significant depressive symptomatology. The finding shows a prevalence rate similar to those predicted in studies by Tomita et al. (2015) on depression in South Africa and Patel & Kleinman (2003) on depression in low to middle income countries. The studies, however, do not depict depression in 2008, which was during the global financial crisis which may have had an effect on the depressive symptomatology of adults in South Africa. Further analysis needs to be

[6] We place a disclaimer on the wave 2 depression results as that particular wave was subject to high rates of non-response.

done in order to investigate why such significant proportions of the adult population in South Africa are experiencing such high depressive symptomatology.

The 2008 figure of 33.15% might be regarded as an overestimation of depression. In the table below, we therefore indicate the depression prevalence rates for 2008 and 2014/2015 using a CES-D threshold of 15 rather than 10. Notwithstanding the fact that a threshold of 10 is used by all other studies using NIDS to assess depression, this study examines whether depression prevalence rates will be similar to averages found in other studies using a threshold of 15. The finding shows that, despite the depression prevalence rate of 9.51% and 5.56% in 2008 and 2014/2015 respectively, this may be regarded as an underestimation of depression in South Africa. This is in comparison to the prevalence of depression among adults in China, which was estimated to be 23.20% (Qin, Wang & Hsieh, 2015: 2). We will therefore continue to make use of the CES-D threshold of 10 for the remainder of the study as it is the recommended threshold.

Figure 4-2: Depression prevalence using a CES-D threshold of 15 in 2008 and 2014/2015(%)

Source: NIDS 2008 and 2014/2015 (author's own calculations)

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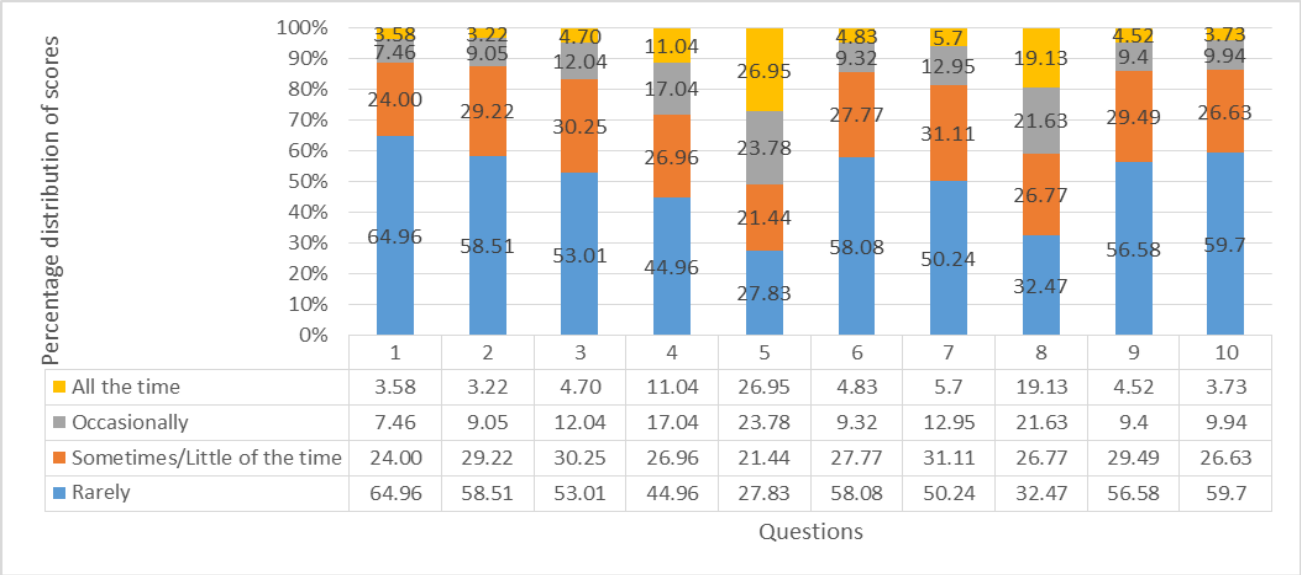
Figure 4-3: The distribution of the frequency depressive symptoms in 2008 (%)[7]



	1	2	3	4	5	6	7	8	9	10
All the time	3.58	3.22	4.70	11.04	26.95	4.83	5.7	19.13	4.52	3.73
Occasionally	7.46	9.05	12.04	17.04	23.78	9.32	12.95	21.63	9.4	9.94
Sometimes/Little of the time	24.00	29.22	30.25	26.96	21.44	27.77	31.11	26.77	29.49	26.63
Rarely	64.96	58.51	53.01	44.96	27.83	58.08	50.24	32.47	56.58	59.7

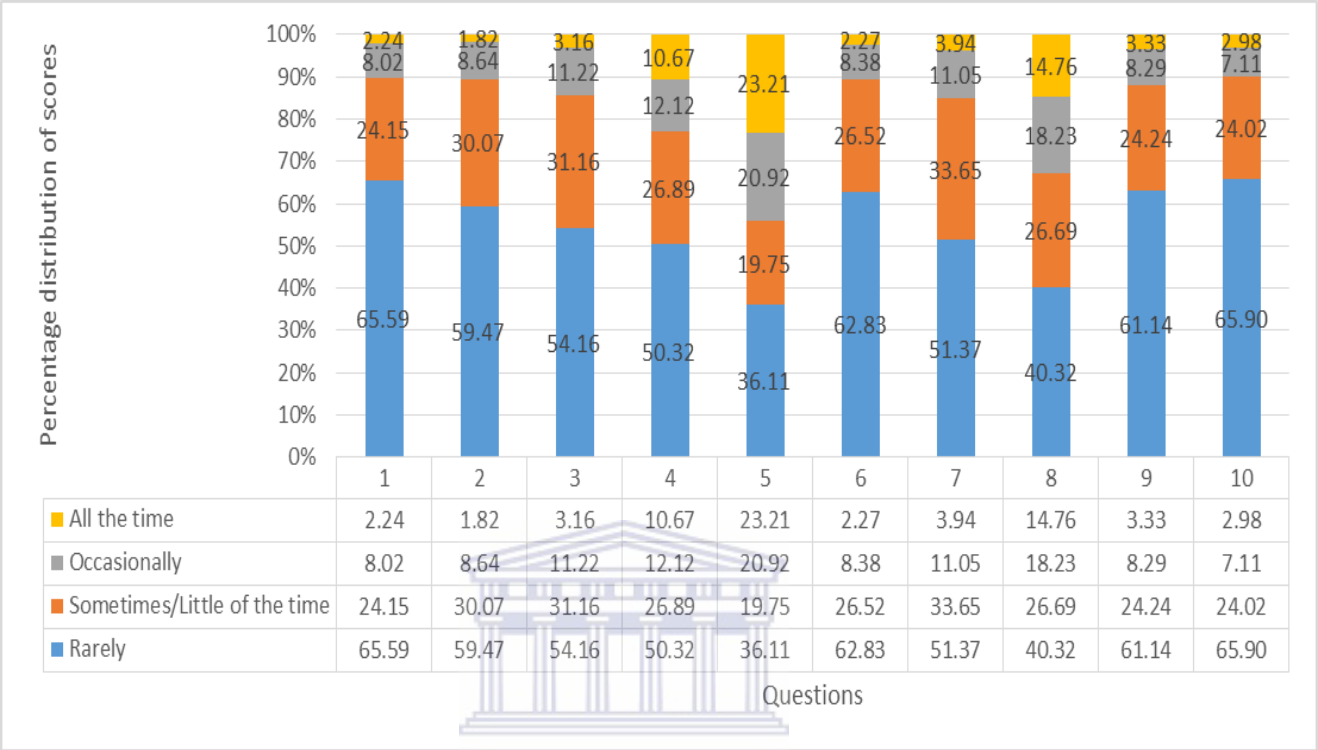
Source: NIDS 2008 (author's own calculations)

Figure 4-3 above describes the scored responses of the study participants to the emotional health section of the NIDS questionnaire in wave 1. The vertical axis indicates the percentage distribution of scores. The scores of respondents on the vertical axis come from the ratings which are indicated by the key. The key underneath graph lists the meaning behind each colour in terms of the scoring system. Zero is indicated by the colour blue. A score of one is indicated by the colour orange. A score of two is indicated by the colour grey. A score of three is indicated by the colour yellow. The horizontal axis indicates the 10 questions that were posed to the study participants.

The figure illustrates that the largest contributors to a high depression score were questions four, five and eight. Each of the questions had 11.04%, 26.95% and 19.13% respectively of respondents scoring three (all of the time) for the question. That is, 11.04% of the respondents felt that everything was an effort in the past week at a frequency of 'All of the time'. In addition, 26.95% of the respondents 'Rarely' felt hopeful about the future in the past week. Lastly, 19.13% of the respondents 'Rarely' felt happy in the past week.

[7] The horizontal axis represents questions from the emotional health section in NIDS. The questions are indicated in table 3-1.

Figure 4-4: The distribution of the frequency of depressive symptoms in 2014/2015 (%)



	1	2	3	4	5	6	7	8	9	10
All the time	2.24	1.82	3.16	10.67	23.21	2.27	3.94	14.76	3.33	2.98
Occasionally	8.02	8.64	11.22	12.12	20.92	8.38	11.05	18.23	8.29	7.11
Sometimes/Little of the time	24.15	30.07	31.16	26.89	19.75	26.52	33.65	26.69	24.24	24.02
Rarely	65.59	59.47	54.16	50.32	36.11	62.83	51.37	40.32	61.14	65.90

Source: NIDS 2014/2015 (author's own calculations)

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Similar to figure 4-3, figure 4-4 above describes the scored responses of the study participants to the emotional health section of the NIDS questionnaire but in wave 4. Questions four, five and eight still have the largest proportions of respondents scoring threes; however, the magnitude is less than that of wave 1. A lower score, 10.67% of the respondents felt that everything was an effort in the past week at a frequency of 'All of the time'. In addition, 23.21% of the respondents 'Rarely' felt hopeful about the future in the past week. Lastly, 14.76% of the respondents 'Rarely' felt happy in the past week.

A decline in depression scores can be expected as a result of fewer people scoring threes, which can be reinforced by the evidence already presented that there were fewer depressed adults in South Africa in wave 4 relative to wave 1. We can, nevertheless, still see a persistent perception of hopelessness about the future. This result could be linked to the socio-political environment in South Africa and how that has affected the socio-economic background of people living in South Africa.

4.1.1.9 Depressive symptomatology in relation to gender and race

We will now investigate the relationship between being of a particular race/gender and experiencing the 10 depressive symptoms that are used to assess depression. This will be investigated through regression analysis. The estimations below will be conducted in a balanced panel.

Table 4-1: Probit regression on female and CES-D tool (Average Partial Effect)

Explanatory variables	dy/dx	Std Error
Bothered	-0.0368	0.0483
Trouble focusing	-0.1390***	0.0514
Depressed	0.0480	0.0416
Everything an effort	-0.0273	0.0295
Not Hopeful about future	-0.0564**	0.0283
Felt fearful	0.1429***	0.0416
Restless sleep	0.0141	0.0348
Not Happy	0.0451	0.0289
Felt lonely	-0.0426	0.0383
Could not get going	0.0245	0.0431
Sample size=642		
Prob>Chi-squared = 0.0028		
Pseudo R2=0.0569		

Source: Author's own calculations using NIDS 2008 and 2014/2015 data.

***Significance at 1%; **Significance at 5%; *Significance at 10%

The table above presents a probit regression showing the probability of the 10 depressive symptoms assessed, using the CES-D tool, being experienced by females. The dependent variable in the model above is the dummy variable 'female'. The depressive symptoms are categorical variables with ratings following the CES-D frequency scoring. That is, the frequencies rank from 0 to 3. The aim of the regression is to assess the depressive symptoms experienced by females. If the frequency of having trouble focusing increased by 1 unit, the probability that the adult was female decreased by 13.90%, holding other factors constant. This outcomes were statistically significant at a 1% significance level. If the frequency of not being hopeful about the future increased by 1 unit, the probability that the adult was female decreased by 5.64%, holding other factors constant. This outcome was statistically significant at a 5% significance level. If the frequency of feeling fearful increased by 1 unit, the probability of being female increased by 14.29%, holding other factors constant. This was statistically significant at a 1% significance level.

High crime rates in South Africa are particularly causes for concern among females who more vulnerable than males. Constant fears of being raped or domestically abused may pose as significant threats the emotional and mental well-being of females in South Africa.

Table 4-2: Probit regression on male and CES-D tool (Average Partial Effect)

Explanatory variables	dy/dx	Std Error
Bothered	0.0368	0.0483
Trouble focusing	0.1390***	0.0514
Depressed	-0.0480	0.0416
Everything an effort	0.0273	0.0295
Not Hopeful about future	0.0564**	0.0283
Felt fearful	-0.1429***	0.0416
Restless sleep	-0.0141	0.0348
Not Happy	-0.0451	0.0289
Felt lonely	0.0426	0.0383
Could not get going	-0.0245	0.0431
Sample size=642		
Prob>Chi-squared = 0.0028		
Pseudo R2=0.0569		

Source: Author's own calculations using NIDS 2008 and 2014/2015 data.

***Significance at 1% **Significance at 5% *Significance at 10%

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The table above presents a probit regression showing the probability of the 10 depressive symptoms assessed using the CES-D tool being experienced by males. The dependent variable in the model above is the dummy variable 'male'. The depressive symptoms are categorical variables with ratings following the CES-D frequency scoring. That is, the frequencies rank from 0 to 3. The aim of the regression is to assess the depressive symptoms experienced by males. If the frequency of having trouble focusing increased by 1 unit, the probability that the adult was male increased by 13.90%, holding other factors constant. This outcomes were statistically significant at a 1% significance level. If the frequency of not being hopeful about the future increased by 1 unit, the probability that the adult was male increased by 5.64%, holding other factors constant. This outcome was statistically significant at a 5% significance level. If the frequency of feeling fearful increased by 1 unit, the probability of being male decreased by 14.29%, holding other factors constant. This was statistically significant at a 1% significance level. We observe that having trouble focusing and feelings of hopelessness are significant contributors to depressive symptoms among adult males in South Africa. A lack of economic opportunities constrain the ability of males

to contribute to financial to their families. This may lead to feelings of hopelessness when considering their future prospects.

Table 4-3: Probit regression on African race group and CES-D tool (Average Partial Effect)

Explanatory variables	dy/dx	Std Error
Bothered	-0.0229	0.0481
Trouble focusing	-0.0012	0.0450
Depressed	0.0670*	0.0395
Everything an effort	-0.0094	0.0277
Not Hopeful about future	0.0309	0.0264
Felt fearful	-0.0325	0.0425
Restless sleep	-0.0134	0.0351
Not Happy	0.0281	0.0266
Felt lonely	0.0549	0.0402
Could not get going	0.0555	0.0454
Sample size=642		
Prob>Chi-squared = 0.1339		
Pseudo R2=0.0470		

Source: Author's own calculations using NIDS 2008 and 2014/2015 data.

***Significance at 1%; **Significance at 5%; *Significance at 10%

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The table above presents a probit regression indicating the probability of the 10 depressive symptoms assessed using the CES-D tool being experienced by Africans. The dependent variable in the model above is 'African'. If the frequency of feeling depressed increased by 1 unit, the probability of being African increased by 6.70%, holding other factors constant. This outcome was statistically significant at a 10% significance level. This result supports our previous findings that Africans were more likely to suffer from depression. Moreover, the fact that Africans were more likely to self-report feeling depressed relative to the other depressive symptoms, highlights how important it is to address determinants of depression among Africans.

Table 4-4: Probit regression on African females using the CES-D tool (Average Partial Effect)

Explanatory variables	dy/dx	Std Error
Bothered	-0.0230	0.0417
Trouble focusing	-0.0573	0.0433
Depressed	0.0280	0.0329
Everything an effort	-0.0364	0.0243
Not Hopeful about future	-0.0410*	0.0239
Felt fearful	0.0999***	0.0343

Restless sleep	0.0399	0.0289
Not Happy	0.0530**	0.0249
Felt lonely	-0.0398	0.0321
Could not get going	0.0583*	0.0352
Sample size=642		
Prob>Chi-squared=0.0063		
Pseudo R2=0.0624		

Source: Author's own calculations using NIDS 2008 and 2014/2015 data.

***Significance at 1%; **Significance at 5%; *Significance at 10%

The table above presents a probit regression indicating the probability of the 10 depressive symptoms assessed using the CES-D tool being experienced by African females. If the frequency of not feeling hopeful about the future increased by 1 unit, the probability of being an African female decreased by 4.10%, holding other factors constant. This outcome was statistically significant at a 10% significance level. If the frequency of feeling fearful increased by 1 unit, the probability of being an African female increased by 9.99%, holding other factors constant. This was statistically significant at a 1% significance level. If the frequency of feeling unhappy increased by 1 unit, the probability that the adult was an African female increased by 5.30%, holding other factors constant. This outcome was statistically significant at a 5% significance level. If the frequency that an adult felt that they could get going increased by 1 unit, the probability that the adult was an African female increased by 5.83%, holding other factors constant. This outcome was statistically significant at a 10% significance level. It is not surprising that feeling fearful is such a significant contributor to a poor emotional and mental health among African females. African females suffer from the social vulnerability that comes from being a female as well as the economic disadvantage associated with being an African. Living in areas of poverty and high crime may therefore be a factor that makes African females particularly susceptible to depression.

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Table 4-5: Probit regression on coloured race group and CES-D tool (Average Partial Effect)

Explanatory variables	dy/dx	Std Error
Bothered	-0.0157	0.0200
Trouble focusing	-0.0047	0.0218
Depressed	0.0276*	0.0161
Everything an effort	-0.0077	0.0110
Not Hopeful about future	-0.0217	0.0164
Felt fearful	0.0320	0.0209
Restless sleep	-0.0156	0.0139

Not Happy	-0.0127	0.0154
Felt lonely	-0.0165	0.0172
Could not get going	-0.0282	0.0227
Sample size=642		
Prob>Chi-squared = 0.0820		
Pseudo R2=0.0369		

Source: Author's own calculations using NIDS 2008 and 2014/2015 data.

***Significance at 1%; **Significance at 5%; *Significance at 10%

The table above presents a probit regression indicating the probability of the 10 depressive symptoms assessed using the CES-D tool being experienced by Coloureds. If the frequency of feeling depressed increased by 1 unit, the probability of being Coloured increased by 2.76%, holding other factors constant. This was statistically significant at a 10% significance level.

Table 4-6: Probit regression on Asian/Indian race group and CES-D tool (Average Partial Effect)

Explanatory variables	dy/dx	Std Error
Bothered	0.0020**	0.0013
Trouble focusing	-0.0010	0.0016
Depressed	-0.0070***	0.0046
Everything an effort	-0.0015*	0.0012
Not Hopeful about future	-0.0006	0.0008
Felt fearful	0.0001	0.0016
Restless sleep	-0.0013	0.0013
Not Happy	0.0000	0.0010
Felt lonely	0.0005	0.0009
Could not get going	-0.0027	0.0018
Sample size=642		
Prob>Chi-squared = 0.0862		
Pseudo R2=0.1804		

Source: Author's own calculations using NIDS 2008 and 2014/2015 data.

***Significance at 1%; **Significance at 5%; *Significance at 10%

The table above presents a probit regression indicating the probability of the 10 depressive symptoms assessed using the CES-D tool being experienced by Asian/Indians. If the frequency of feeling bothered by things that do not usually bother them increased by 1 unit, the probability of being Asian/Indian increased by 0.2%, holding other factors constant. This was statistically significant at a 5% significance level. If the frequency of feeling depressed increased by 1 unit, the

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probability that the adult was Asian/Indian decreased by 0.7%, holding other factors constant. This outcomes were statistically significant at a 1% significance level. If the frequency of feeling that everything was an effort increased by 1 unit, the probability that the adult was Asian/Indian decreased by 0.15%, holding other factors constant. This outcome was statistically significant at a 10% significance level.

Table 4-7: Probit regression on white race group and CES-D tool (Average Partial Effect)

Explanatory variables	dy/dx	Std Error
Bothered	0.0202	0.0423
Trouble focusing	0.0082	0.0388
Depressed	-0.0857**	0.0369
Everything an effort	0.0245	0.0235
Not Hopeful about future	-0.0223	0.0215
Felt fearful	-0.0036	0.0378
Restless sleep	0.0331	0.0286
Not Happy	-0.0140	0.0218
Felt lonely	-0.0410	0.0369
Could not get going	-0.0269	0.0371
Sample size=642		
Prob>Chi-squared = 0.1323		
Pseudo R2=0.0712		

Source: Author's own calculations using NIDS 2008 and 2014/2015 data.

***Significance at 1%; **Significance at 5%; *Significance at 10%

The table above presents a probit regression indicating the probability of the 10 depressive symptoms assessed using the CES-D tool being experienced by whites. If an adult's frequency of feeling depressed increased by 1 unit, the probability that the adult was white decreased by 8.57%, holding other factors constant. This was statistically significant at a 5% significance level. Even though the remaining results were statistically significant we note the results do indicate that white adults are less fearful, more hopeful about the future and in general less likely to have a poor emotional and mental health.

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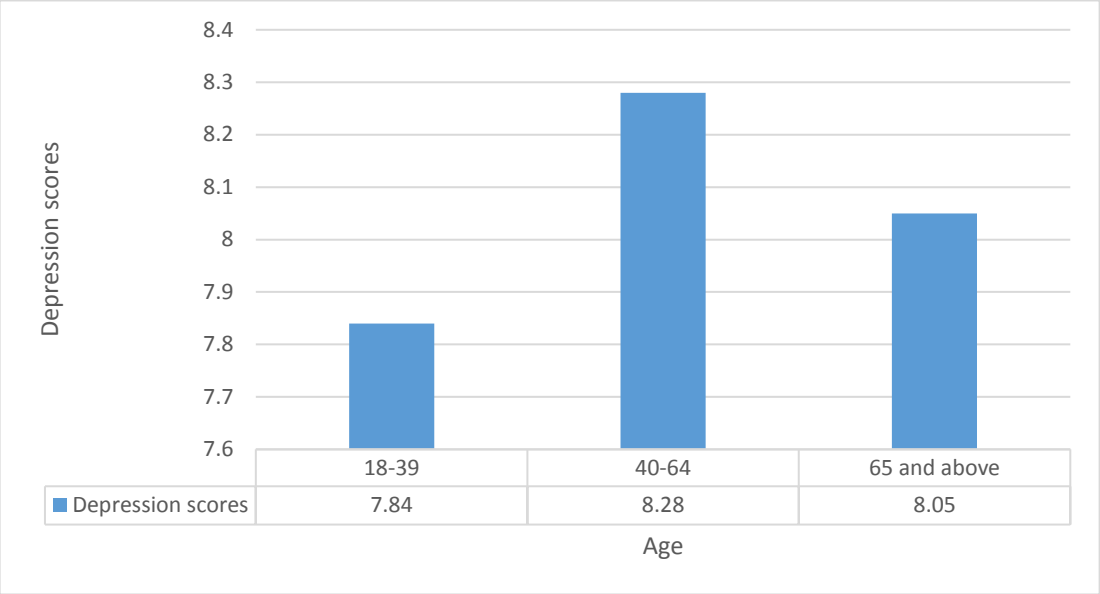
Figure 4-5: CES-D scores by age



Source: NIDS 2014/2015 (author's own calculations)

Age is an important socio-demographic and physical aspect that may be helpful in explaining the incidence of depression. The bar graph above describes average CES-D scores for four age categories for respondents in wave 4. On average, adults between the ages of 18 and 39 had a CES-D score of 7.84. Adults between the ages of 40 and 65 had an average CES-D score of 8.28. This CES-D score is slightly higher (0.44 points) than the average CES-D score for adults between the ages of 18 and 39. On average, adults between the ages of 65 and above had a CES-D score of 8.05. This is slightly lower (0.23 points) than adults between the ages of 40 and 65. Overall, we see an increasing trend in the graph above, which indicates that as individuals' age, they experience depressive symptoms at a greater frequency. The CES-D scores reported for adults between the ages of 40 to 64 could be related to work stress that is faced by adults in this age cohort. Whilst the CES-D scores for adults in the 65 and above age cohort may be more affected by their increased vulnerability to physical health problems. Most of the poor adults in the 65 and above age cohort qualify for an old age grant. This is relevant particularly in the South African context, where multi-generational households are common, a trend which is associated with poverty and the old age grant (Case & Deaton, 1998:1330). This is important to point out as in China the elderly were found to exhibit significant depressive symptomatology, which was linked to feelings of loneliness (Qin et al., 2015:4). The fact that older adults, particularly those that live in poverty, may be

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surrounded by family members could be protective against feelings of loneliness experienced by the elderly in countries where the elderly live in relatively more isolation. Older adults, however, may more likely suffer from physical ailments that worsen their mental health.

Table 4-8: Average CES-D scores by gender

Gender	2008		2014/2015	
	Average score	Standard deviation	Average score	Standard deviation
Male	7.49	5.00	6.93	4.3
Female	8.37	4.96	7.27	4.42

Source: NIDS 2008 and 2014/2015 (author's own calculations)

Table 4-8 above lists the average CES-D scores by gender for 2008 and 2014/2015. Average CES-D scores declined from 2008 to 2014/2015 for both males and females. On average, females had higher CES-D scores relative to males in both waves. This is not surprising as most existing studies present similar findings. These studies include Ardington and Case (2010) as well as Tomita et al. (2015). The average CES-D scores for females also varied around the mean more than males. This is indicated by higher standard deviations for females relative to males. The average CES-D score for males declined by 0.56 points from 2008 to 2014/2015. On average, female's CES-D scores were 1.10 points lower in 2008 compared to 2014/2015.

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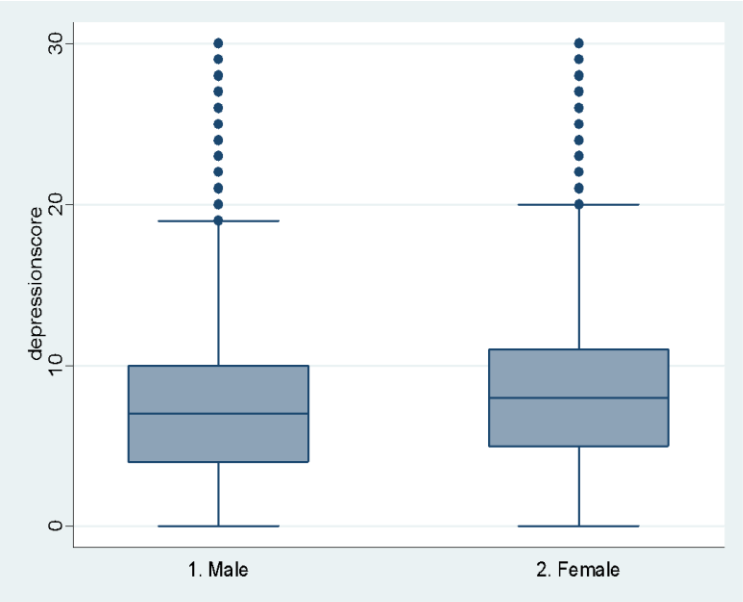
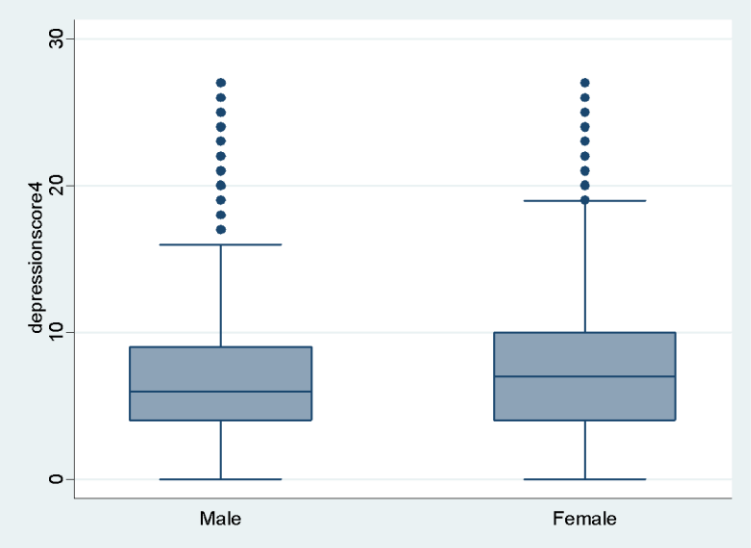
Figure 4-6: Boxplot on depression by gender in 2008



Source: Authors own calculations using 2008 NIDS data

Figure 4-7: Boxplot on depression by gender in 2014/2015



Source: Authors own calculations using 2014/2015 NIDS data

Figure 4-6 and 4-7 above describe our relationship between depression and gender by means of boxplots. The boxplots indicate that the median CES-D scores for males are lower than those of females in both 2008 and 2014/2015. In 2014/2015 however the scores find that for men, the middle 50% CES-D scores were less equitably distributed relative to 2008. Overall we find inequality in the distribution of CES-D scores when relating CES-D to gender, in that females have higher CES-D scores relative to males.

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Table 4-9: Average CES-D scores by race for 2008 and 2014/2015

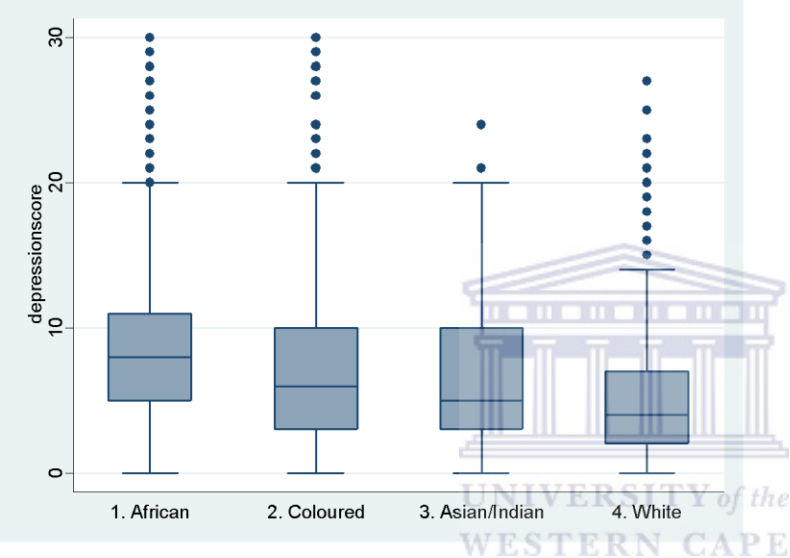
Race groups	2008		2014/2015	
	Average scores	Standard deviation	Average scores	Standard deviation
African	8.51	4.69	7.10	4.21
Coloured	7.15	4.95	6.86	4.50
Asian/Indian	6.96	5.21	6.79	4.83
White	5.27	4.17	6.59	4.77

Source: NIDS 2008 and 2014/2015 (author's own calculations)

Table 4-9 above lists the average CES-D score of the various population race groups for wave 1 and wave 4. Africans were found to have the highest average CES-D scores for both waves. The average CES-D score for Africans was 8.51 in 2008 and 7.10 in 2014/2015. The average CES-D score for Africans therefore declined by 1.41 points from wave 1 to wave 4. The white population group was the only race group to experience an incline in average depression scores. Coloureds,

Asian/Indians and Africans had lower CES-D scores on average in wave 4 compared to wave 1. The coloured population group's average CES-D score decreased by 0.29 points from wave 1 to wave 4. On average Asian/Indians had a slightly lower (0.17 points) depression score in wave 4 relative to wave 1. The average CES-D score for the white population group saw the greatest increase among the population race groups. Their average CES-D scores were 1.43 points higher in wave 4 than in wave 1.

Figure 4-8: Boxplot on depression and race in 2008



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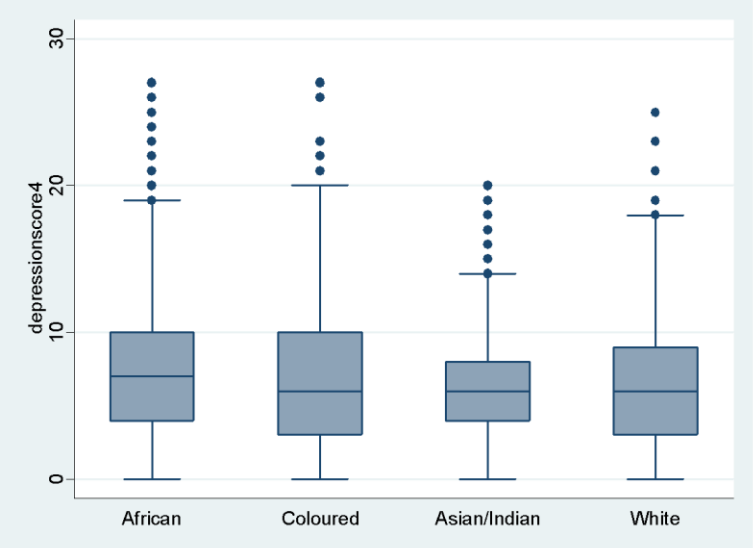
Source: Authors own calculations using 2008 NIDS data

Figure 4-9: Boxplot on depression and race in 2014/2015



Source: Authors own calculations using 2014/2015 NIDS data

Figures 4-8 and 4-9 describe the depression and race relationship by means of boxplots. Interestingly we find that the median CES-D scores are more similar in 2014/2015 relative to 2008. The median CES-D scores are particularly similar among the coloured, Asian/Indian and white population groups. In 2008, we find that for the Asian/Indian group, the middle 50% CES-D scores were less equitably distributed relative to the other population groups. We, however, find that 2014/2015, the middle 50% CES-D scores in the Asian/Indian group were more equitably distributed. Despite the decline in inequality in CES-D scores between African population group (poorest CES-D outcomes) and the white population group (best CES-D outcomes), we still find inequality to persist between the most socioeconomically disadvantaged groups, being Africans and coloureds, and the most socioeconomically privileged group being the white population group.

4.1.1.7 Depression and Physical Illnesses

Depression is connected to physical illnesses in that people who have physical illnesses are more likely to experience depressive symptoms. Hence, we investigate the link between physical illnesses and depression scores.

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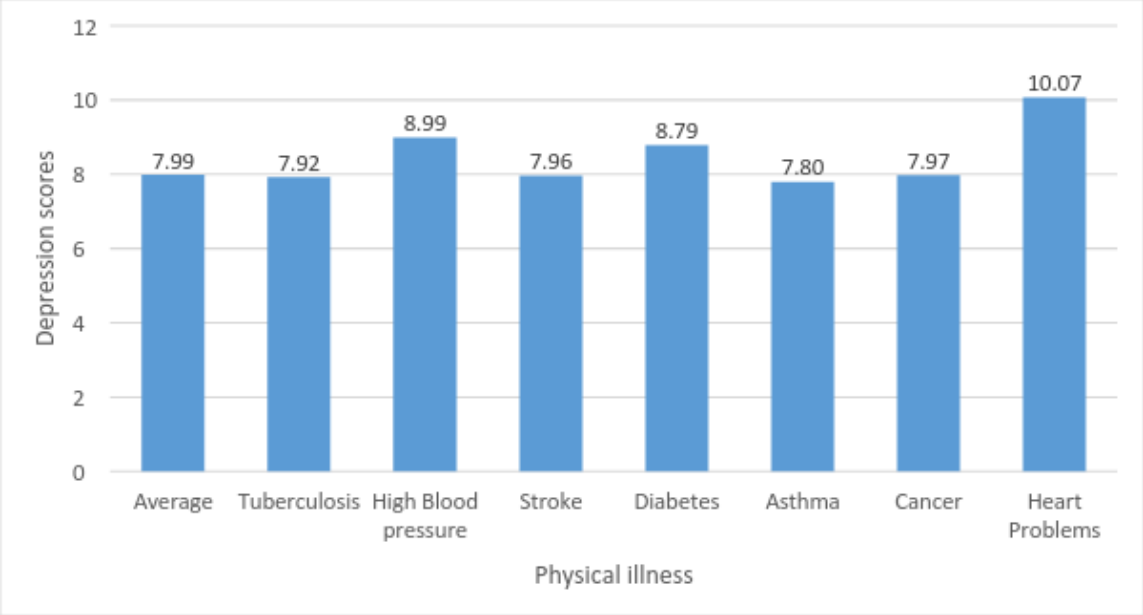
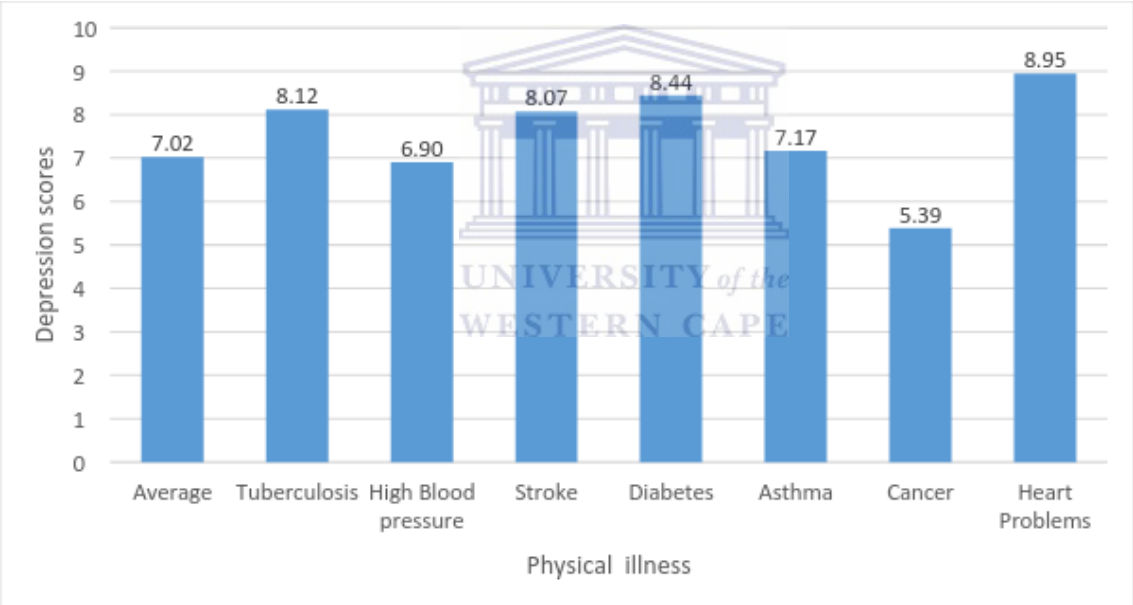
Figure 4-10: Depression scores for respondents with physical illnesses in 2008.



Source: NIDS 2008 (author's own calculations)

The figure above describes the link between depression scores and physical illnesses for the year 2008. Adults with physical illnesses had higher depression scores on average compared to healthy adults and the average for all study participants of 7.99. Adults who suffered from heart problems had a depression score of 10.07, which was higher than that of the average adult in South Africa, as well as adults who suffered from other physical illnesses. The average depression score for adults who suffered from high blood pressure was markedly high at 8.99 points. Interestingly, adults who suffered from heart problems on average had depression scores higher than the threshold for depression. That is, on average, heart problem sufferers had significant depressive symptoms (depressed). Depression scores for adults with diabetes were 8.79, which was notably higher than the average depression score for adults in South Africa.

Figure 4-11: Depression scores for respondents with physical illnesses in 2014/2015



Source: NIDS 2014/2015 (author's own calculations)

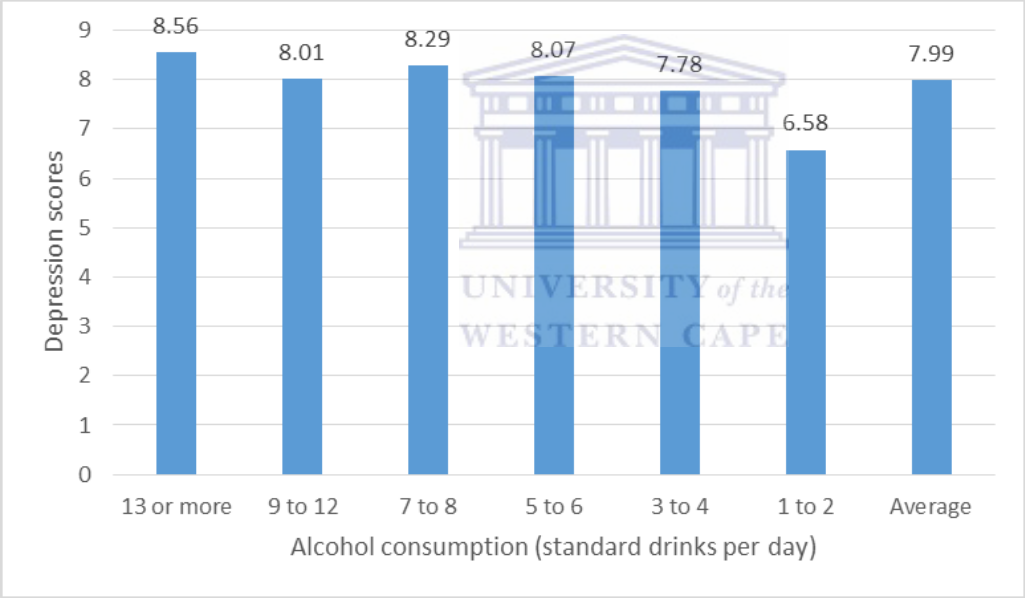
The graph above also illustrates the link between depression scores and physical illnesses but for the period 2014/2015. Declines in depression scores occurred for adults across all physical illnesses except strokes and tuberculosis. The average depression score for adults living in South Africa declined to 7.02 in 2014/2015 from 7.99 in 2008. Adults with heart problems and adults with cancer experienced the largest declines in depression scores from 2008 to 2014/2015. On average depression scores for adults who had cancer was lowered by 2.58 points in 2014/2015. On average adults who had heart problems in 2008 had depressions scores lowered by 2.09 points

in 2014/2015. Interestingly, in 2014/2015 depression scores for adults with cancer or high blood pressure was lower than that of the average depression score for adults living in South Africa.

4.1.1.8 Depression and Alcohol Consumption

Alcohol dependency and abuse in itself is a mental disorder/behavioural disorder. Depression is linked to various negative behaviours, such as drug abuse and overconsumption of alcohol. Depressed adults may be turning to alcohol as a means to cope with the depressive symptoms they experience. We therefore investigate the link between depression and alcohol consumption patterns.

Figure 4-12: CES-D scores by alcohol consumption in 2008

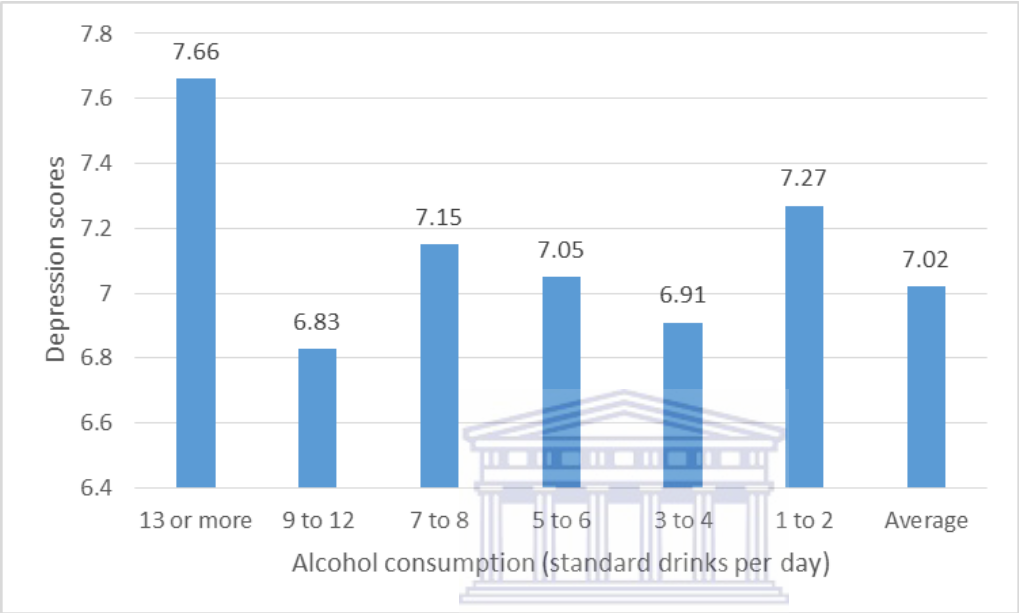


Source: NIDS 2008 (authors own calculations)

The graph above describes the average CES-D scores of adults in South Africa by alcohol consumption frequencies in 2008. Relative to the average depression score for adults in South Africa, depression scores for adults consuming 5 or more standard drinks was higher. A clear trend can be seen, as average depression scores increase as the standard amount of drinks consumed per day increases, with the highest depression scores found for adults who consumed more than 13 standard drinks a day. Thus, the graph finds high alcohol consumption for adults who have higher

frequencies of depressive symptoms. This finding may indicate a reliance on alcohol as a form of coping mechanism for adults who experience significant frequencies of depressive symptoms.

Figure 4-13: CES-D scores by alcohol consumption in 2014/2015



Source: NIDS 2014/2015 (author's own calculations)

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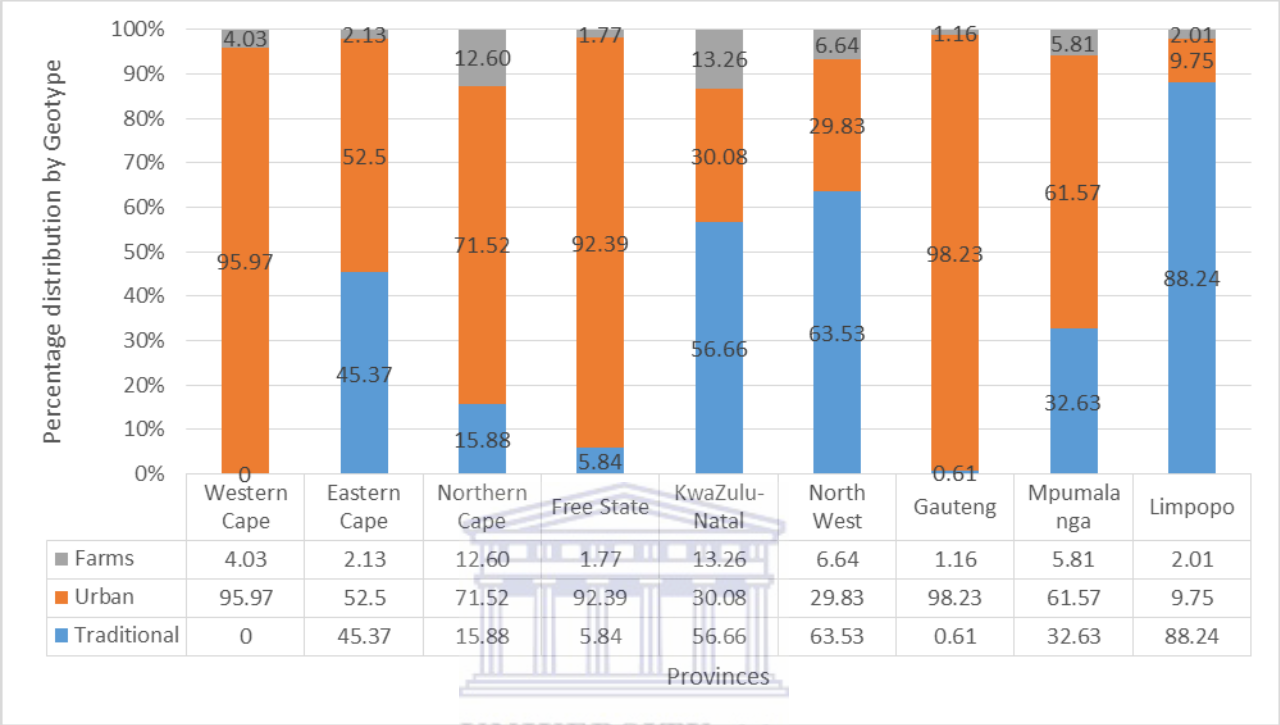
The graph above illustrates the average CES-D scores of adults in South Africa by alcohol consumption frequencies in the period 2014/2015. Differences can be seen between 2008 and 2014/2015. Most notably, a decline in depressions scores across all alcohol consumption categories. Furthermore, we find that the link between depression scores and alcohol consumption patterns is more mixed in 2014/2015 than in 2008. However, subjects who consumed 13 or more standard drinks per day still had the highest depression scores. In addition the depression scores of adults, who consumed more rather than fewer standard drinks per day, still remain high relative to the latter. The graph therefore still indicates that in fact, a positive relationship does exist between alcohol consumption and the frequency of depressive symptoms.

4.3 The Distribution of Depression

Figure 4-14: Depression by province and geographical area type in 2008 (%)



Source: NIDS 2008 (author's own calculations)

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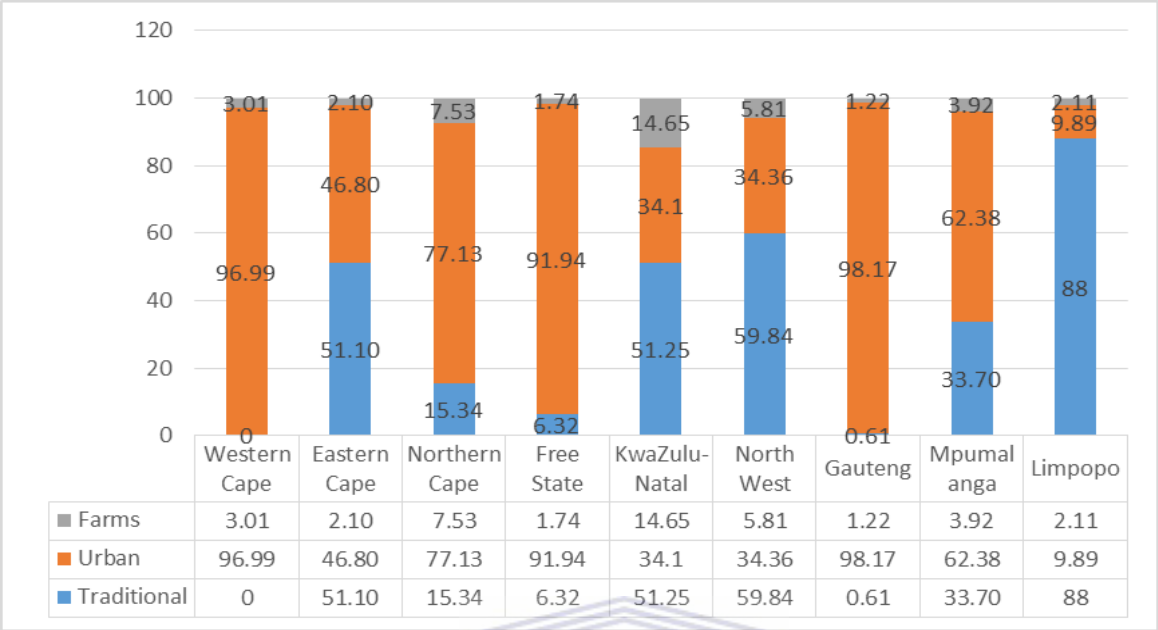
The graph above illustrates the distribution of the depressed by province and geographical area type within the province for wave 1. Overall very few of the depressed population lived in farm areas. Most of the depressed population lived in urban areas and in some provinces, they lived in traditional areas. The graph indicates that in the Western Cape the majority (95.97%) of depressed adults live in urban areas. In the Eastern Cape, 52.50% of depressed adults live in urban areas whilst 45.37% live in traditional areas. In the Northern Cape, the majority (71.52%) of depressed adults live in urban areas. In the Free State, most (92.39%) of depressed adults live in urban areas. In Kwa-Zulu Natal, 56.66% of depressed adults live in traditional areas whilst 30.08% of the depressed adults live urban areas. Similarly in North West, a greater proportion of depressed adults reside in traditional areas (63.53%) compared to urban areas (29.83%). Almost all of the depressed adults living in Gauteng lived in urban areas (98.23%). In Mpumalanga, 61.57% of depressed adults live in urban areas whilst 32.63% live in traditional areas. Limpopo was the only province in which more than two thirds of the depressed population lived in traditional areas.

Figure 4-15: Depression by provinces and geographical area type in 2014/2015



Source: NIDS 2014/2015 (author's own calculations)

Figure 4-11 above illustrates the distribution of the depressed by province and geographical area type within the province for wave 4. Similar to 2008, very few of the depressed population lived in farm areas. Most of the depressed population lived in urban areas and in some provinces, they lived in traditional areas. The graph indicates that in the Western Cape the majority (96.99%) of depressed adults live in urban areas. In the Eastern Cape, 46.80% of depressed adults live in urban areas whilst 51.10% live in traditional areas. This means that, compared to 2008, more depressed adults in the Eastern Cape resided in traditional areas relative to urban areas. In the Northern Cape, the majority (77.13%) of depressed adults live in urban areas. In the Free State, most (91.94%) of depressed adults live in urban areas. In Kwa-Zulu Natal, 51.25% of depressed adults live in traditional areas whilst 34.10% of the depressed adults live urban areas. Similarly in North West, a greater proportion of depressed adults reside in traditional areas (59.84%) compared to urban areas (34.36%). Almost all of the depressed adults living in Gauteng lived in urban areas (98.17%). In Mpumalanga, 62.38% of depressed adults live in urban areas whilst 33.70% live in traditional areas. Similar to 2008, in 2014/2015 Limpopo was characterised as the only province in which more than two thirds of its depressed population lived in traditional areas.

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4.4 Conclusion

The chapter met the first objective of the study. Interesting findings arose from the review of the trends on the prevalence and distribution of depression. In this chapter we found that the prevalence of depression dropped significantly from 2008 to 2014/2015 despite the recent increase. We also discussed the CES-D scores by age, gender, race, physical illness and alcohol consumption. Finally we described the distribution of depression in South Africa. The chapter met the first objective of the study and was able to give the reader an overview of depression in South Africa over the periods 2008 to 2014/2015.

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Chapter 5 : Chronic Depression in South Africa

5.1 Introduction

This chapter focuses on the chronically depressed. Adults who were depressed in both wave 1 and wave 4, will be referred to as "chronically depressed". The findings above on depression indicate the depression outcomes vary by socio-demographics and inequality exists and persists between males and females as well as population race groups. Subsequently, we will assess the distribution of chronic depression by socio-demographics in order to investigate whether inequality exists in terms of the profile of chronically depressed adults. This chapter meets the second objective of the study.

5.2 Chronic depression

Table 5-1: Transition matrix on depression between wave 1 and wave 4 (%)

Wave 1	Wave 4		
	Not Depressed	Depressed	Total
Not Depressed	74.85	25.51	100
Depressed	69.98	30.02	100
Total	73.22	26.78	100

Source: NIDS 2008 and 2014/2015 (author's own calculations)

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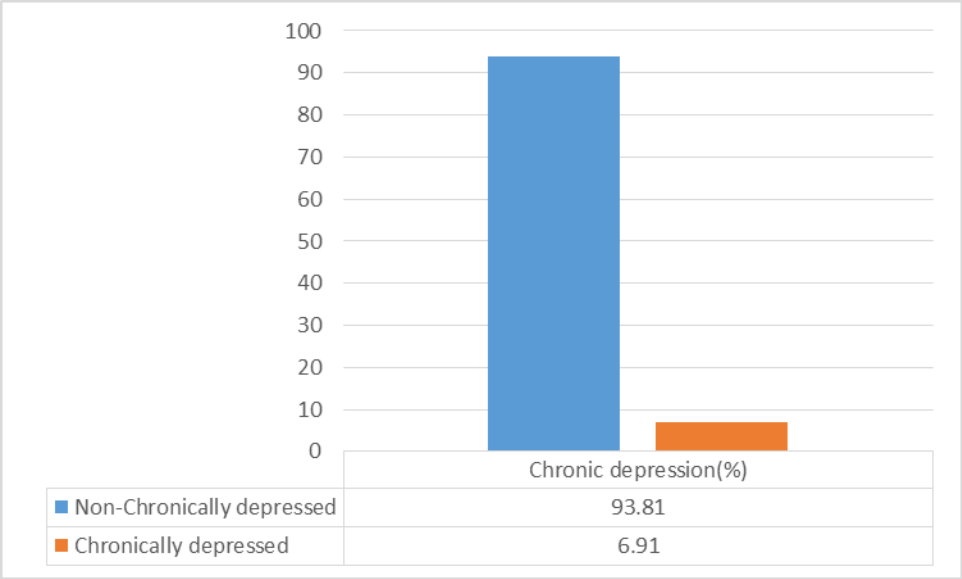
Table 5-1 above is a depression transition matrix for wave 1 and wave 4. This matrix is important as it illustrates the transition of adults into and out of depression between waves 1 and 4. Interestingly, 69.98% of the people who were depressed in wave 1 were no longer depressed in wave 4. In contrast, 25.51% of the people were not depressed in wave 1 became depressed by wave 4. The matrix indicates that 74.85% of the non-depressed people in wave 1 were not depressed in wave 4. This is a positive finding as it indicates that roughly three-quarters of adults in South Africa who were not depressed in 2008 did not transition into depression by 2014/2015. On the other hand 30.02% of the people who were depressed in wave 1 were still depressed in wave 4.

Figure 5-1: Proportion of chronically depressed adults



Source: NIDS 2008 and 2014/2015

It is important to keep in mind that 30.02% of population is not depressed but out of those that were depressed in wave 1, 30.02% were depressed by wave 4. The figure above shows that the actual proportion of the population that were chronically depressed was 6.91%. Further analysis will now be conducted in order to explore the characteristics of those defined in this analysis as the chronically depressed.

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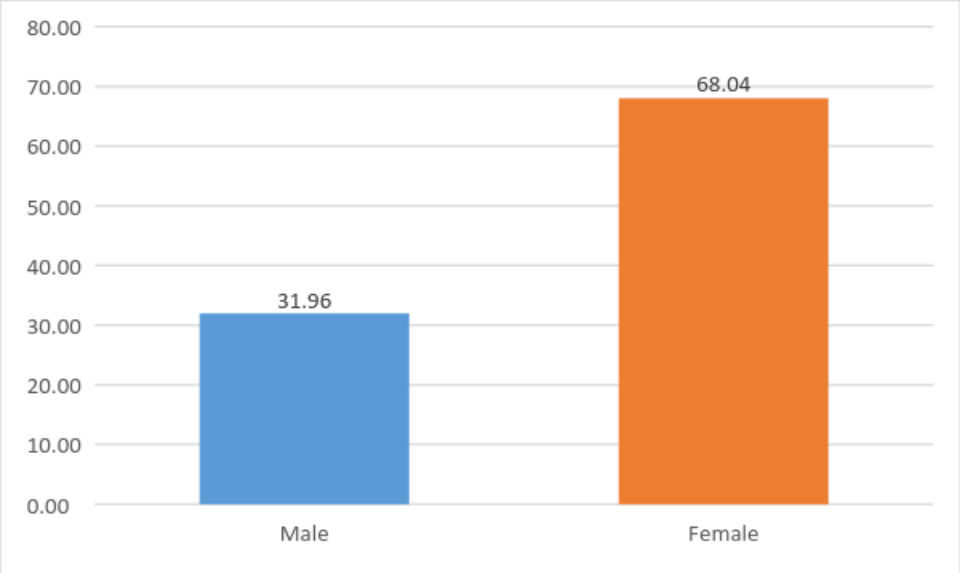
Figure 5-2: A gender description of the chronically depressed population in 2014/2015 (%)



Source: NIDS 2008 and 2014/2015 (author's own calculations)

Figure 5-2 above describes the gender distribution of adults who were depressed in both waves 1 and 4, i.e. the chronically depressed. We find that the chronically depressed were composed of 31.96% males and 68.04% females. It is surprising to note that more than two thirds of the chronically depressed are females.

Table 5-2: A race description of the chronically depressed population in 2014/2015(%)

Race	Percentage
African	88.86
Coloured	5.29
Asian/Indian	2.34
White	3.51

Source: NIDS 2008 and 2014/2015 (author's own calculations)

Table 5-2 above describes the chronically depressed in terms of population race groups. The figures indicate chronic depression as a proportion of those that are depressed. The greatest proportion of the chronically depressed were Africans (88.86 %). The smallest proportion of the chronically depressed were Asian/Indian (2.34%). However, as stated before, caution must be taken when interpreting results for the Asian/Indian population group as an insignificant proportion of the group is represented in the sample used for these findings. In fact, since only 2.89% of the sample was Asian the results above actually indicate an underrepresentation of Asian/Indians among the chronically depressed. Similarly, the coloured population group makes up 9.32% of the sample, yet only made of 5.29% of the chronically depressed. The white population group, which makes up 10.19% of the sample, only made up 3.51% of the chronically depressed. The results above therefore indicate an overrepresentation of Africans among the chronically depressed. This may be linked to the socioeconomic outcomes of Africans relative to other population groups.

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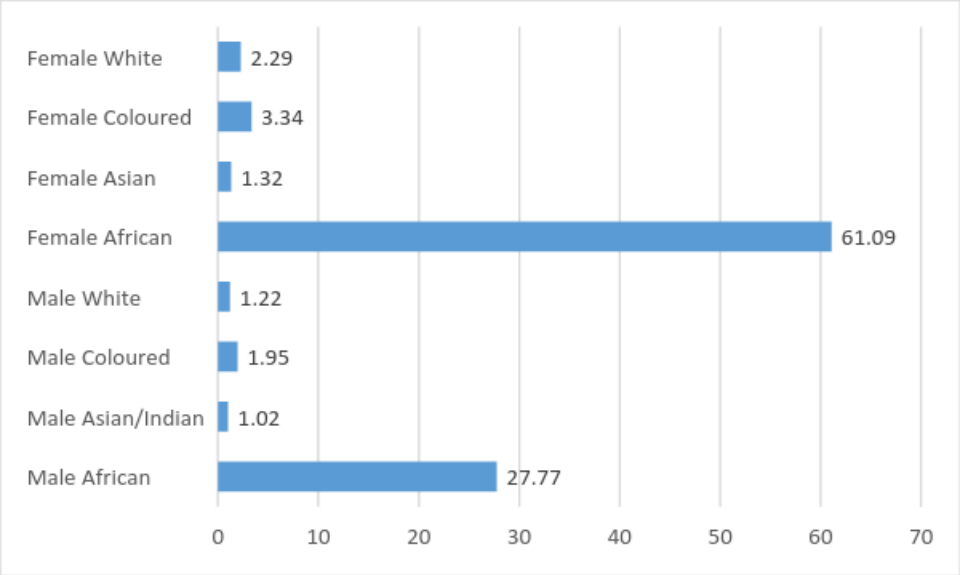
Figure 5-3: Gender and race of chronically depressed (%)



Source: NIDS 2008 and 2014/2015 (author's own calculations)

Figure 5-3 above further describes the chronically depressed. The table considers the gender and race of those who are chronically depressed. This builds a profile of the type of individual who would be likely to be chronically depressed. The lowest proportion of chronically depressed adults out of a population race group and gender are Asian males. That is, 1.02% of Asian males were depressed in both wave 1 and wave 4 of NIDS. The highest proportion of chronically depressed adults out of a population race group and gender are African females. An astounding 61.09% of chronically depressed people were found to be African females, indicating an overrepresentation of African females among the chronically depressed. African males made up 27.77% of the chronically depressed. Across all of the population race groups more females were chronically depressed.

Further information on the help-seeking behaviour of the white and Asian/Indian population groups could have proved useful in assessing whether a greater proportion of white and Asian/Indian adults were able to transition out of depression because a greater proportion of them sought help as soon as they experienced depressive symptoms, relative to other population gender and race groups. Consequently a significant proportion of African men and women may be chronically depressed because they did not go to a health professional in order to resolve any emotional health problems. This may be related to the fact that Africans were more socioeconomically disadvantaged and found access to mental health care more difficult relative to

their white and Asian/Indian counterparts. According to Thornicroft (2008) as cited in Burns (2011: 106), some of the reasons that individuals do not use mental health services and instead, consult with traditional healers, include financial and geographic barriers. It can be noted that consultation with a traditional healer may delay access to treatment and as a result worsen the mental health condition of the individual (Burns, 2011:106).

Table 5-3: A geographic description of the chronically depressed population by geographical in 2014/2015 (%)

Geographical area type	2014/2015
Traditional	31.51
Urban	64.64
Farms	3.84
Total	100

Source: NIDS 2008 and 2014/2015 (author's own calculations)

Table 5-3 above describes the chronically depressed by their geographical area. The figures indicate chronic depression as a proportion of those that are depressed. In 2014/2015, we found that 31.51% adults living traditional areas were chronically depressed. The proportion of chronically depressed adults in farming areas was lowest relative to traditional and urban areas. Interestingly, 3.84% and 64.64% of adults who were chronically depressed resided farming and urban areas respectively.

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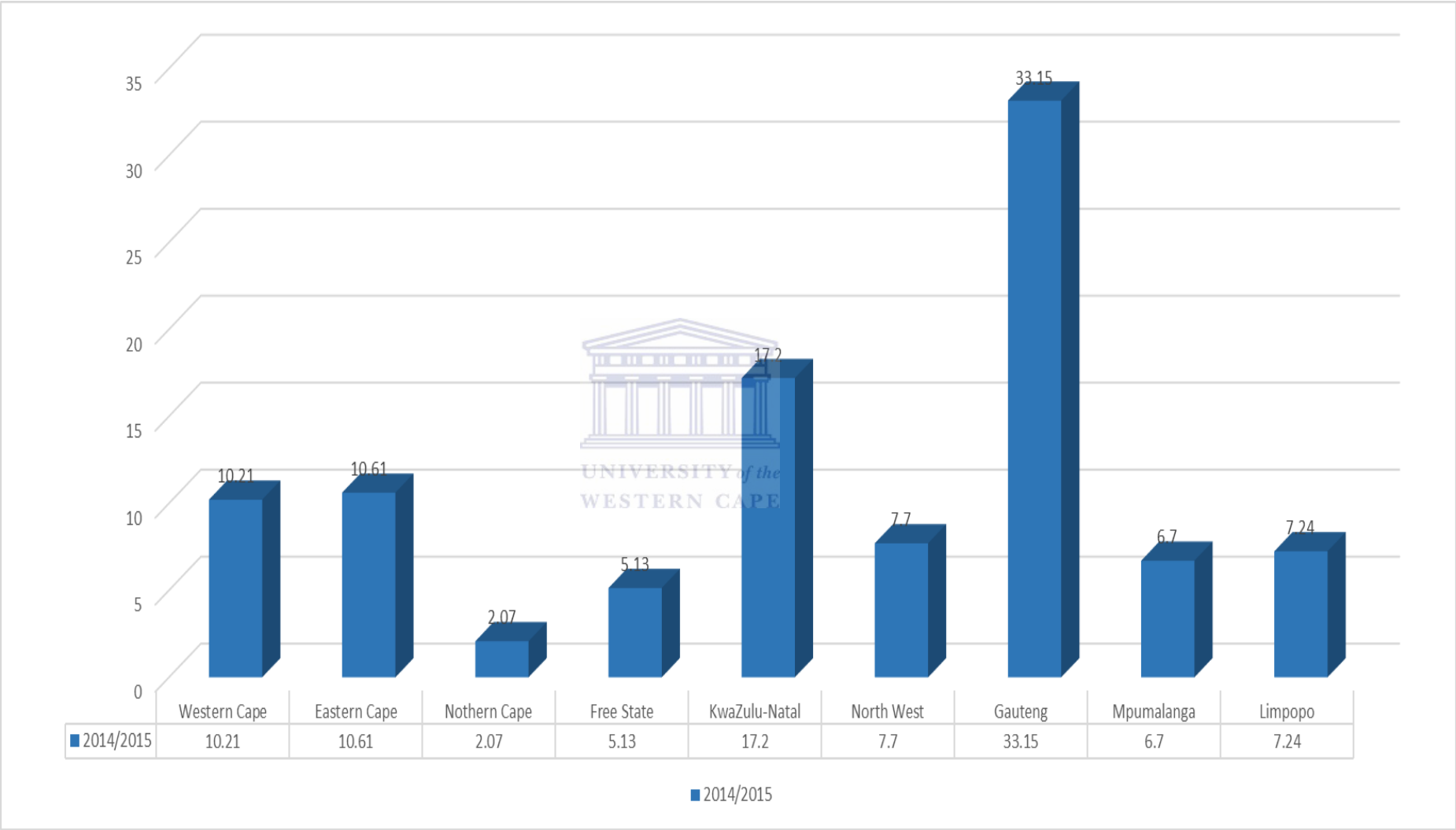
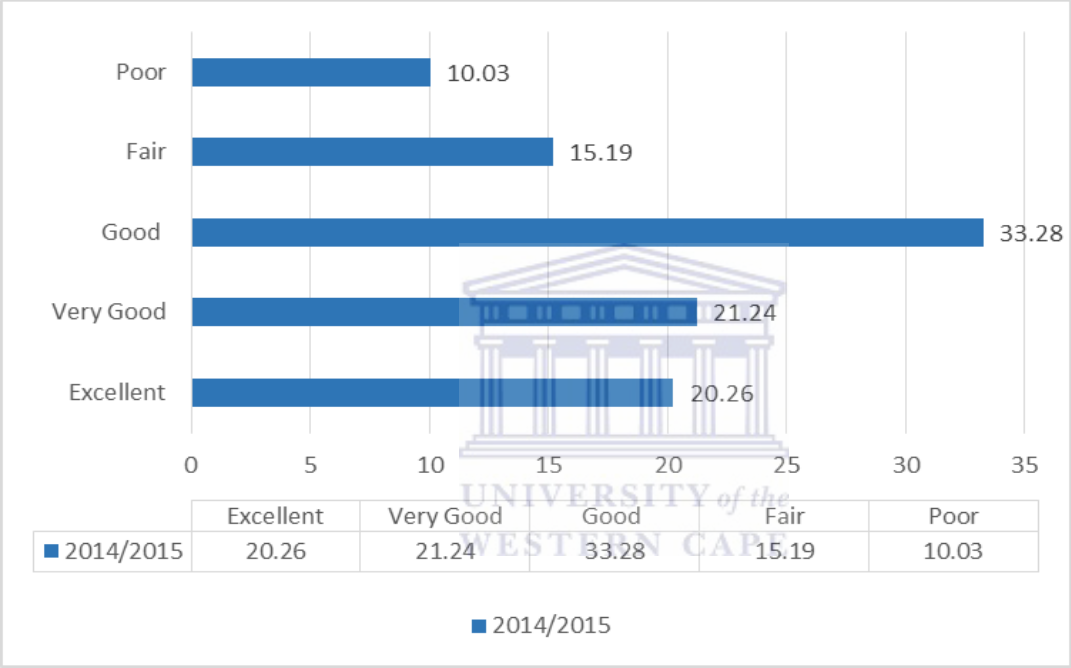
Figure 5-4: Distribution of chronic depression by province for 2014/2015 (%)



Source: NIDS 2008 and 2014/2015 (author's own calculations)

Figure 5-4 above describes the chronically depressed in terms of provinces. The provinces with the greatest proportion of its adult residents being chronically depressed residing in them in 2014/2015 were Gauteng, Kwa-Zulu Natal and the Eastern Cape. Each had 33.15%, 17.20% and 10.61% respectively of the chronically depressed residing in them. Provinces that had the least proportion of its adult residents being chronically depressed were Free State and Northern Cape. Each had 5.13% and 2.07% respectively of the chronically depressed residing in them.

Figure 5-5: Chronic depression by perceived health status for 2014/2015 (%)



Source: NIDS 2008 and 2014/2015 (author's own calculations)

Figure 5-5 above illustrates the perceived health status with respect to chronic depression. The results indicate that 10.03% of chronically depressed adults perceived their health status to be poor in 2014/2015. There is a clear a trend, in that a greater proportion of chronically depressed adults perceived their general health status as good to excellent relative to fair and poor. Categories that were closer to "excellent" generally had higher proportions of chronically depressed adults as opposed to categories closer to "poor," which generally had lower proportions of chronically depressed adults.

5.3 Conclusion

This chapter assessed the socioeconomic profile of the chronically depressed. We found that 30.02% of adults who were depressed in 2008 were still depressed in 2014/2015. As seen in the appendix the actual proportion of adults who were chronically depressed was 6.91%. In addition, the chapter assessed the gender, racial and geographic composition of the chronically depressed population in South Africa for both 2008 and 2014/2015.

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Chapter 6 : Structural and Intermediate Determinants of Depression in South Africa

6.1 Introduction

The chapter will pay closer attention to key social determinants of depression. This is intended to further investigate social inequality and how it relates to depression. The suggested inequalities will later be discussed in the context of the literature. The chapter is split into four subsections. The first part of the chapter reviews the characteristics of the depressed population. The second part of this chapter includes an overview of the social and economic characteristics of adults in South Africa by various CES-D levels. The aim is to investigate the socioeconomic standing of adults as depressive symptoms are experienced at different intensity levels. The third subsection includes an econometric analysis of the structural determinants of depression. The econometric analysis will be conducted in a balanced panel. The last subsection section will include an econometric analysis of the intermediate determinants of depression. This will also be conducted in a balanced panel. The estimates in the third and fourth subsections seek to identify which social determinants of health significantly contribute to depressive symptomatology among adults in South Africa and through which intermediate pathways the structural determinants affected depression. This chapter will meet the third objective of the study.

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6.2 Socio-demographics of depressed adults

Table 6-1: Characteristics of depressed adults in 2008 and 2014/2015(%)

CES-D>10	2008	2014/2015
Gender		
Male	36.89	44.7
Female	63.11	55.3
Race		
African	85.89	80.62
Coloured	7.38	9.28
Asian/Indian	1.94	1.93
White	4.79	8.17
Educational Attainment		
Zero Schooling	13.36	7.23
Primary School education	24.91	18.23
High School education	54.35	61.43

Tertiary education	7.38	13.11
Occupational Status		
Code 1(elementary occupations)	31.63	32.93
Code 2(service workers, skilled agricultural workers)	49.51	47.32
Code 3(technicians & associate professionals)	5.36	5.23
Code 4(professionals)	13.46	14.52
Perceived Health		
Excellent	22.49	26.63
Very Good	23.78	23.95
Good	25.15	31.27
Fair	15.65	12.00
Poor	12.93	6.15

Source: NIDS 2008 and 2014/2015 (author's own calculations)

Table 6-1 above describes the depressed population in wave 1 and wave 4. In 2008, 36.89% of the depressed population was male as opposed to 63.11%, which were females. That is, more women were depressed relative to men. Interestingly, in 2014/2015 the proportion of the depressed population that was male increased to 44.70%. The proportion that were females declined to 55.30%. That is, a decline occurred in the differences in depression outcomes between males and females in 2014/2015 relative to 2008.

In 2008, the proportion of the depressed that were African was 85.89%. This was markedly higher than the other racial groups. Only 1.94% of the depressed were Asian/Indians. That is, Asian/Indians made the smallest proportion of the depressed population in 2008. Compared to 2008, the proportion of the depressed, who were African, declined from 85.89% to 80.62% in 2014/2015. White, coloured and Asian/Indian adults made up greater proportions of the depressed in 2014/2015 relative to 2008. However they still remained significantly smaller than the depressed population, which was African.

In 2008, most of the depressed population had completed only up to a matric/ grade 12 qualification. Furthermore, 24.91% of the depressed population had only completed up to a grade 7 qualification. Interestingly, in 2014/2015 more depressed adults only had a matric level qualification compared to 2008. That is, 7.08% more depressed adults had only completed a matric/ grade 12 level qualification. In addition, 5.73% more depressed adults had completed up to a tertiary level qualification in 2014/2015 relative to 2008. The increase in educational attainment among depressed adults is further reinforced by the decline by 6.13% in depressed

adults who had no schooling from 2008 to 2014/2015. This perhaps could be an underlying reason for the overall decline in depression from 2008 to 2014/2015, despite the incline in depression in recent years.

The occupational status of depressed adults varied very slightly from 2008 to 2014/2015. However, a slight incline can be seen in the proportion of depressed adults who had elementary occupations as their primary occupation from 31.63% of adults in 2008 to 32.93% of adults in 2014/2015. In addition, a slight decline can be seen in the proportion of depressed adults who had code 2 occupations as their primary occupation from 49.51% in 2008 to 47.32% in 2014/2015. Declines in the code 2 and code 3 occupation skill categories were coupled by increases in the proportion of depressed adults with code 1 and code 4 level occupations. The decline in depressed adults working in code 3 occupations was, however, very small indicating that overall, more depressed adults worked in occupations requiring more skills in 2014/2015 relative to 2008.

The increase in depressed adults working in professional occupations could be linked to the increase in the proportion of the depressed, who had completed up to a tertiary level qualification. Thus, increases in educational attainment levels may have played a role in transitioning depressed adults from low-paying occupations to a higher paying occupation. Subsequently, improvements in education and the occupation of depressed adults may have also played a role improving the socioeconomic status of adults and reducing their depressive symptoms to an extent whereby they could transition out of depression. The results for occupation are, however, not as clear as the results for education.

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In 2008, 22.49% of depressed adults perceived their general health status to be “excellent.” This proportion increased to 26.63% by 2014/2015. In contrast, in 2008, 12.93% of depressed adults perceived their general health status to be “poor.” Interestingly, this proportion declined to 6.15% by 2014/2015. This is an interesting finding as roughly a quarter of adults who have significant depressive symptoms still regard their general health status as excellent. Emotional and mental health is an important part of one’s overall health which makes it quite shocking that such a significant proportion of depressed adults perceive nothing to be wrong with their health.

Further analysis needs to be performed in order to understand the results above. The first point of departure would be to first assess the depression tool itself and find out which depressive

symptoms were most common and perhaps could be driving the poor depression outcomes among adults in South Africa.

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Table 6-2: Socioeconomic variables and depression intensity levels (2008, 2010, 2012 and 2014/2015)

	Wave 1			Wave 2			Wave 3			Wave 4		
Waves	CES-D(0-9)	CES-D(10-14)	CES-D(15 >)	CES-D(0-9)	CES-D(10-14)	CES-D(15 >)	CES-D(0-9)	CES-D(10-14)	CES-D(15 >)	CES-D(0-9)	CES-D(10-14)	CES-D(15 >)
Household size(Average)	2.64	2.59	3.22	2.49	2.37	2.4	2.11	2.41	2.42	1.98	1.99	2.4
Per Capita Income(Average)	4259	2042	2274	4524	3287	2751	4935	2713	3124	5166	4670	5949
Number of negative events (%)												
0	93.65	94.88	94.47	94.87	95.81	97.6	96.47	97.21	98.2	88.14	88.47	88.59
1	5.99	4.88	5.27	4.89	4.19	2.35	3.46	2.61	1.73	11.13	11.02	10.85
2	0.35	0.024	0.023	0.024	0	0.05	0.03	2.61	0.04	0.071	0.51	0.052
3	0.01	0	0.03	0	0	0	0.04	0	0.02	0.02	0	0.04
Occupational Code (%)												
1	26.35	31.68	40.15	25.14	37.21	41.74	28.3	39.96	34.33	27.33	34.36	28.81
2	48.46	48.86	40.07	49.81	49.93	40.43	46.63	42.76	56.85	48.9	43.74	55.63
3	4.8	4.88	4.94	5.16	2.75	4.27	5.24	1.09	N/A	5.82	5.87	4.06
4	20.39	14.58	14.84	19.89	13.11	13.57	19.83	16.25	8.82	17.95	16.03	11.5
Educational Attainment (%)												
Zero Schooling	7.43	10.58	8.96	8.09	12.74	8.07	8.32	12.45	8.37	7.59	10.87	9.09
Primary Schooling	18.08	22.92	18.76	18.65	21.59	17.47	17.38	23.39	17.81	17.78	21.34	18.9
High School education	60.42	59.74	65.01	56.88	56.18	63.48	56.62	54.98	60.86	53.86	52.14	60.58
Tertiary Education	14.07	6.76	7.27	16.37	9.49	10.99	17.68	9.18	12.95	20.77	15.65	11.43
Perceived Health Status(Average)	2.21	2.53	3.01	1.97	2.32	2.59	2.22	2.46	2.74	2.25	2.59	2.83

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Social Capital (Only waves 1 and 2)(%)												
0	60.18	60.35	88.07	64.67	64.58	94.21	N/A	N/A	N/A	N/A	N/A	N/A
1	26.69	27.02	8.45	24.7	21.95	4.07	N/A	N/A	N/A	N/A	N/A	N/A
2 to 4	11.79	11.71	3.35	9.54	12.54	1.06	N/A	N/A	N/A	N/A	N/A	N/A
5 to 9	1.13	0.92	0.06	1.04	0.82	0	N/A	N/A	N/A	N/A	N/A	N/A
10 and above	0.2	0	0.07	0.4	0.11	0.12	N/A	N/A	N/A	N/A	N/A	N/A
Life Satisfaction(Average)	5.72	5.21	4.70	5.12	4.34	3.87	5.26	3.91	3.78	5.7	4.54	4.15

Source: NIDS 2008, 2010, 2012 and 2014/2015 (author's own calculations)

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Table 6-2 above illustrates the connection between socioeconomic variables and depression scores over the four waves of NIDS. The table seeks to assess whether there is connection between socioeconomic outcomes and depression intensity levels. No pattern can be seen for household size in wave 1 and 2 but in wave 3, household size increased at higher intensity levels of depression. This effect is more pronounced in wave 4 as the average household size increases from 1.98 to 1.99 in the categories, with a CES-D scores 0-9 and 10-14 respectively. This trend continues, with the average household size for respondents with depression scores above 15 is 2.4 people. Therefore, larger household sizes are found to be positively associated with higher depression scores. No pattern is found between average per capita income and depression scores in wave 1 and 3. For both waves 1 and 3, average income declines as we move from CES-D scores between 0 and 9 to CES-D scores between 10 and 14, and then later increases as we move from CES-D scores between 10 and 14 to CES-D scores 15 and above. The average per capita income in wave 2 is found to decline with higher intensity levels of depression. Interestingly, waves 2 and 4 have contradictory trends. Wave 2 shows depression scores to decline with per capita income. Per capita income decreased from R4524 to R3287 to R2751 as depression scores increased respectively, from 0-9 to 10-14 and then from 10-14 to 15 and above. On the other hand, wave 4 shows depression scores to increase with per capita income. Per capita income increased from R5166 to R5949 as depression scores increased respectively from 0-9 to 15 and above. Hence, the relationship between per capita income and depression offers conflicting results.

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Despite an increase in the proportion of people experiencing negative events in the past 24 months from waves 1 to 2 and 2 to 3, a negative trend seems to be consistent in that depression scores did not increase with negative events. In wave 1 the proportion of people that experienced no negative life event in the past 24 months remained relatively consistent around 93-95%. A slight increase is seen from 93.65% at CES-D (0-9) to 94.88% at CES-D (10-14), followed by a slight decline from 94.88% at CES-D (10-14) to 94.47% at CES (15 and above). A slight decline is, however, seen in the proportion of people who experienced two negative life events in the past 24 months from 0.35% to 0.24% to 0.23% over increasing depression intensity levels. A more consistent trend is seen in wave 2 as the proportion of people experiencing no negative life events in the past 24 months increased from 94.87% to 95.81% to 97.60% over the CES-D (0-9), CES-D (10-14) and

CES-D (15 and above) intensity levels respectively. A similar trend appears in wave 3, as the proportion of people experiencing no negative life events in the past 24 months increased from 96.47% to 97.21% to 98.20% over the CES-D (0-9), CES-D (10-14) and CES-D (15 and above) intensity levels respectively. A decline is also seen in the proportion of people who experienced one negative life event in the past 24 months from 3.46% to 2.61% to 1.73% over increasing depression intensity levels. Wave 4 was no different as the proportion of people experiencing no negative life event in the past 24 months over the CES-D (0-9), CES-D (10-14) and CES-D (15 and above) intensity levels increased from 88.14% to 88.47% to 88.59% respectively. Therefore depression intensity levels decreased as the number of negative life events experienced in the past 24 months increased.

The occupational skill level of an individual's primary occupation is indicated below in relation to depression scores. Increasing proportions of adults working in elementary occupations indicated by code 1 were depressed at higher depression intensity levels. This finding was consistent in waves 1 and 2. Despite the slight decline, the proportion of code 1 occupation adults, who were depressed in wave 3 and 4 from CES-D (10-14) to CES-D (15 and above), there were still more adults with depression scores in the CES-D (15 and above) category relative to the CES-D (0-9) category. Code 2 and 3 occupations had inconsistent trends between the various depression intensity levels. A decreasing proportion of adults working in professional occupations indicated by code 4 were depressed at higher depression intensity levels. This trend was consistent for most of the waves at increasing intensity levels. Overall, fewer proportions of adults working in professional occupations as their primary occupation had CES-D scores 15 and above, relative to adults working in elementary occupations as their primary occupation.

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Some inconsistent results were found between depression intensity levels and educational attainment. However, the overall results do indicate that at higher depression intensity levels. fewer people had a tertiary level education. This is clear as 14.07% of adults with a tertiary education had CES-D scores between 0 and 9 compared to 7.27% of adults with a tertiary school level education in wave 1 having CES-D scores 15 and above. In wave 2, 16.37% of adults with a tertiary education had CES-D scores between 0 and 9 compared to 10.99% of adults with a tertiary school level education had CES-D scores 15 and above. In wave 3, 17.68% of adults with a tertiary education had CES-D scores between 0 and 9 compared to 12.95% of adults with a tertiary school

level education had CES-D scores 15 and above. In wave 4, 20.77% of adults with a tertiary education had CES-D scores between 0 and 9 compared to 11.43% of adults with a tertiary school level education had CES-D scores 15 and above. The trend for adults with no schooling was an increasing trend for most of the waves, as greater proportions of adults had CES-D scores 15 and above relative to adults who had no schooling and scored between 0 and 9 in terms of emotional health. Overall, these results further reinforce earlier outcomes indicating that higher education and occupations are protective against depressive symptoms.

CES-D scores in relation to the average perceived general health status were negatively associated. This is because the perceived health status was ranked from 1 to 5, where 5 was 'poor' and 1 was 'excellent'. Therefore, the lower the average perceived health score the better the perceived general health of the adult. In wave 1, the average perceived health status of adults was 2.21 for adults with CES-D scores between 0 and 9. The average perceived health increased from 2.21 to 2.53 and from 2.53 to 3.01 as the from the CES-D (0-9) category to the CES-D (10-14) category to the CES-D (15 and above) category respectively. This means that adults perceived their general health status to be poorer at higher intensity levels of depression. This outcome was consistent across all the waves.

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Social capital could only be assessed for waves 1 and 2 as questions regarding social capital were only posed in those two waves. The categories take into account the participation of an adult in a number of community based activities. Lower levels of social capital can be seen between waves 1 and 2 across all the depression intensity levels. In wave 1, the proportion of adults with zero levels of social capital increased from 60.18% to 60.35% to 88.07% over the CES-D (0-9), CES-D (10-14) and CES-D (15 and above) intensity levels respectively. In addition, the proportion of adults who participated in 2 to 4 social capital related activity declined from 11.79% to 11.71% to 3.35% over the CES-D (0-9), CES-D (10-14) and CES-D (15 and above) intensity levels respectively. Therefore as social capital declines, the proportion of people experiencing higher intensity levels of depression increases. The outcomes for wave 2 overall were similar to those of wave 1, particularly when comparing social capital for CES-D scores at a 0-9 level with scores to CES-D scores at a 15 and above level.

Life satisfaction was rated on a scale of 1 to 10, with 1 being the least satisfied and 10 being the most satisfied. Life satisfaction was found to be negatively associated with depression scores. At

higher depression intensity levels, the average life satisfaction was much lower relative to lower depression intensity levels. This outcome was consistent across all the waves. In wave 1, the average life satisfaction declined from 5.72 to 5.21 and from 5.21 to 4.70 from the CES-D (0-9) category to the CES-D (10-14) category to the CES-D (15 and above) category respectively. In wave 4, the average life satisfaction declined from 5.7 to 4.54 and from 4.54 to 4.15 from the CES-D (0-9) category to the CES-D (10-14) category, to the CES-D (15 and above) category respectively. Therefore adults exhibiting lower intensity levels of depression were more satisfied with life, relative to adults exhibiting higher intensity levels of depression.

6.3 Structural determinants of depression

This below section empirically analyses the social determinants of depression by using a panel regression. The regression estimates the probability of being depressed subject to various determinants. The first regression focuses on socioeconomic status. The second regression considers the broader social determinants. The last regression considers all the explanatory variables. The Hausman test results, in the previous chapter, indicate that we may use the random effects model to estimate to the determinants of depression. It is important to note that from this point onwards a balanced panel is used. As a result the sample size we use to make inference drastically declines.

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Table 6-3: Random effects probit regressions on depression (Average Partial Effect)

Explanatory Variables	I		II		III	
	dy/dx	Std Error	dy/dx	Std error	dy/dx	Std Error
Socioeconomic status						
Log per capita income	-0.1145**	0.0547			-0.1025*	0.0612
Log Educational Attainment	-0.1530	0.1148			-0.1781	0.1264
Occupational Status						
Elementary occupations	1				1	
Plant & Machine operators	-0.1025	0.1070			-0.0773	0.1111
Technicians	-0.1977	0.2139			-0.1271	0.2189
Professionals	-0.2212	0.1520			-0.2078	0.1554
Other Social determinants						
Race						
African			1		1	
White			-0.4970***	0.1863	-0.2512	0.2030
Coloured			-0.3489***	0.1098	-0.3113***	0.1188
Asian/Indian			-0.7101*	0.4192	-0.4188	0.4265
Gender						
Male			1		1	
Female			0.1594*	0.0860	0.1610	0.0958
Geographical area						
Rural			1		1	
Urban			-0.0627	0.0899	0.0849	0.1029
Age						
18-29					1	
30-39					0.0162	0.1378

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40-49					-0.0173	0.1503
50-59					-0.0664	0.1748
60-59					-0.1734	0.3239
70 and older					0.7967	0.8509
Marital status						
Not Married					1	
Married					-0.0884	0.0980
Perceived health status						
Excellent					1	
Very good					-0.0514	0.1142
Good					0.1309	0.1126
Fair					0.3092*	0.1688
Poor					0.7814**	0.3220
Social cohesion (trust)						
Trust neighbour						
Not likely					1	
Likely					-0.0415	0.1456
Trust stranger						
Not likely					1	
Likely					-0.4162**	0.1856
Negative life events					0.2900*	0.1593
Number of Observations	**1214**		**1284**		**1214**	
Prob>Chi-squared	**0.0011**		**0.0008**		**0.0004**	
Log Likelihood	**-651.20045**		**-690.7972**		**-630.2256**	
Likelihood ratio test Chi2(01)	**2.92**		**2.14**		**2.38**	
Likelihood ratio test Prob>Chi2	**0.044**		**0.072**		**0.061**	

Source: Author's own calculations using NIDS data

***Significance at 1%, **Significance at 5%; *Significance at 10%

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The table above presents a random effects probit regression on depression. The model investigated the social determinants that increase the likelihood of an adult's being depressed. The first regression only controls for the socioeconomic status variables. That is, income, education and occupational status. The regression is meant to investigate whether adults with a higher socioeconomic status, in fact had a lower probability of being depressed, as established in the literature. The results indicate that if income increases by 1% the probability that an adult is depressed declines by 11.45%, holding other factors constant. This outcome is statistically significant at a 5% significance level. An overall conclusion can be made that adults with a lower socioeconomic standing are more likely to be depressed based on income. However, it is important to transcend the purely individualistic socioeconomic status variable and assess whether social inequality (which exists among the various racial and gender population groups, as well as urban and rural geographical areas) has any connection to dissimilarities in depression outcomes.

The second regression therefore only controls for race, gender and geographical area variables. The regression finds that white adults were 49.70% less likely to be depressed relative to African adults. Coloured adults were 34.89% less likely to be depressed relative to African adults. Both of the above outcomes were statistically significant at a 1% significance level. Asians were found to be 71.01% less likely to be depressed relative to Africans. This was statistically significant at a 10% significance level. We would caution this result, as the sample included a significantly low proportion of Asian/Indian adults. Females were found to be 15.94% more likely to be depressed relative to males. This outcome was significant at a 10% significance level. Despite the statistical insignificance of the geographical area variables, disparities in the likelihood of being depressed between male and females as well as the population race groups is found to exist. This disparity could be linked to the socioeconomic status of these groups. We have already found that females and Africans residing in South Africa were significantly disadvantaged in terms of their socioeconomic status. In terms of the outlook of these groups on society, we have also already found that Africans are more likely to not be hopeful about their future. In addition, women were most likely to be significantly affected mentally by feelings of fear. These challenges to the mental health of vulnerable adults in South Africa require government to intervene. Social policies on preventing crime will benefit all, but women in particular. Further policies and social outreaches to uplift African communities would be beneficial in adding hope and providing ways for the disadvantaged to participate in society.

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The third regression controls for all the explanatory variables. We find that a 1% increase in per capita income decreased the likelihood of an adult being depressed by 10.25%. This outcome was statistically significant at a 10% significance level. The results also indicate that relative to Africans, coloureds were found to have a 31.13% lower probability of being depressed. This outcome was statistically significant at a 1% significance level. This result is expected as the socioeconomic status of Africans is lower than that of coloured adults in South Africa.

Adults who perceived their general health status to be "fair," had a 30.92% greater likelihood of being depressed relative to adults who perceived their health status to be excellent. This outcome was found to be significant at a 10% significance level. Interestingly, adults who perceived their health status as "poor" were also more likely to be depressed relative to those that perceived their health status as excellent. In fact, adults who rated their health status as "poor" were 78.14% more likely to be depressed, relative to adults with an excellent perceived health status. This outcome was statistically significant at a 5% significance level. This suggests that the perceived overall health of adults is linked to their emotional health. Subsequently, if an individual self-identifies their general health as poor, their emotional health could suffer as a result of other health concerns the individual may have. The descriptive statistics indicated that adults with physical illnesses had higher depression scores relative to the average adult in South Africa. This seeks to further reinforce the importance of addressing physical health and mental health without leaving neglecting either aspect.

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Social cohesion can be linked to the trust neighbours have in each other and their community, as well as how they get along with each other. In the case of a lost wallet containing R200 being returned to by a stranger, adults who thought this to be very likely to happen had a 41.62% lower probability of being depressed relative to adults who thought that it was not likely that a stranger were to return the wallet containing the money. This was found to be statistically significant at a 1% significance level.

Table 6-4: Random effects Probit regression on depression using a CES-D threshold of 15 (Average Partial Effect)

Explanatory Variables	dy/dx	Std errors
Socioeconomic status		
Log per capita income	0.0895	0.0928
Educational Attainment(years) squared	-0.0024	0.0015
Occupational Status		
Elementary occupations	1	
Plant & Machine operators	-0.2474	0.1627
Technicians	0.0471	0.2960
Professionals	-0.0357	0.2318
Other Social determinants		
Race		
African	1	
White	-0.0195	0.2922
Coloured	0.0346	0.1588
Asian/Indian	0.2327	0.5120
Gender		
Male	1	
Female	0.3705***	0.1413
Geographical area		
Rural	1	
Urban	-0.0595	0.1451
Age		
18-29	1	
30-39	-0.0189	0.2092
40-49	-0.0405	0.2202
50-59	-0.2681	0.2662
60-59	-0.1401	0.4239
70 and older	0.9462	0.7178
Marital status		
Not Married	1	
Married	-0.0579	0.1399
Perceived health status		
Excellent	1	
Very good	-0.0906	0.1695
Good	-0.1468	0.1712
Fair	0.4697**	0.2132
Poor	0.4468	0.3757
Social cohesion (trust)		
Trust neighbour		

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Not likely	1	
Likely	0.1540	0.2174
Trust stranger		
Not likely	1	
Likely	-0.5185**	0.2471
Negative life events	0.1845	0.2226
Number of observations=1284		
Prob>Chi-squared	**0.3154**	
Log Likelihood	**-238.7918**	
Likelihood ratio test Chi2(01)	**0.04**	
Likelihood ratio test Prob>Chi2	**0.417**	

Source: Author's own calculations using NIDS data

***Significance at 1%; **Significance at 5%; *Significance at 10%

The table above presents a random effects probit regression on depression using a CES-D threshold of 15 instead of 10 as used in the table before. The aim of this is to assess, if a different threshold were used, whether the overall results would remain consistent. The regression finds holding other factors constant, females were 37.05% more likely to be depressed relative to their male counterparts. This outcome was significant at a 1% significance level. This is an interesting finding as the prior regression, which uses a threshold of 10, has a lower probability of females being more depressed than males compared to the regression using a threshold of 15. Furthermore, the result was statistically significant in regression III in the previous table. This could mean that perhaps at high depression intensity levels, females are even more likely to be depressed than their male counterparts. Other findings of this regression include adults who perceived their health status as fair being 46.97% more likely to be depressed relative to adults who perceived their general health status as "excellent", holding other factors constant. This outcome was significant at a 5% significance level. Adults who thought it was very likely that a stranger would return a wallet containing R200 were 51.85% less likely to be depressed relative to adults who thought it was not likely that the wallet containing the R200 would be returned, holding other factors constant. The outcome was statistically significant a 5% significance level. This was a strongly consistent outcome using both a threshold of 10 and 15.

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6.4 Intermediary determinants of depression

Table 6-5: Random effects regression on heart problems as an intermediary determinant of depression

Explanatory Variables	dy/dx	Std Error
African	1	
White	-0.1915***	0.4719
Asian/Indian	0.5316	0.6268
Coloured	-0.0825***	0.3371
Elementary occupation	1	
Plant and machinery occupation	-0.5969***	0.3400
Technician occupation	0.1090	0.4458
Professional occupation	-0.6525***	0.4232
Log per capita income	0.3792***	0.1730
Male	1	
Female	0.1984	0.2539
Sample size=1284		
Prob>Chi-squared=0.1993		

Source: Author's own calculations using NIDS data

***Significance at 1%; **Significance at 5%; *Significance at 10%

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The results of the table above, which will be discussed, were all statistically significant at a 1% significance level. The table above indicates that holding other factors constant, white adults had a 19.15% lower chance of having heart problems relative to Africans. Holding other factors constant, coloured adults had a 8.25% lower likelihood of having heart problems relative to Africans. This indicates that one of the intermediary determinants of high depression for Africans may have been a greater likelihood of having heart problems. Holding other factors constant, adults who worked in plant and machinery occupations were 59.69% less likely to have heart problems relative to adults, who worked in elementary occupations. Adults who worked in professional occupations were 65.25% less likely to have heart problems relative to adults who worked in elementary occupations, holding other factors constant. The results therefore suggest that one of the intermediary determinants of high depression for adults who worked in elementary occupations may have been a greater likelihood of having heart problems. Holding other factors constant, if the income of an adult increased by 1%, the likelihood of the adult having heart problems increased by 37.92%. This was statistically significant at a 1% significance level.

Table 6-6: Random effects probit regression on life satisfaction as an intermediary determinant of depression

Explanatory Variables	dy/dx	Std Error
African	1	
White	0.6119***	0.1696
Asian/Indian	0.4205	0.3165
Coloured	0.5015***	0.091
Elementary occupation	1	
Plant and machinery occupation	0.1611*	0.0882
Technician occupation	-0.0941	0.1746
Professional occupation	0.4155***	0.1216
Log per capita income	0.2213***	0.0459
Male	1	
Female	0.0946	0.0756
Sample size=1284		
Prob>Chi-squared=0.000		

Source: Author's own calculations using NIDS data

***Significance at 1%; **Significance at 5%; *Significance at 10%

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Findings from the table above, which will be discussed, were statistically significant at a 1% significance level unless otherwise stated. Life satisfaction in the regression above is defined as a self-rated life satisfaction score on a scale of 10 that exceeds 5. Holding other factors constant, white adults were 61.19% more likely to be satisfied with life relative to Africans. Holding other factors constant, coloured adults were found to be 50.15% more likely to be satisfied with life relative to Africans. These results indicate that a lower life satisfaction may have been an intermediary determinant of high depression for Africans. Adults that worked in plant and machinery were 16.11% more likely to be satisfied with life relative to adults that worked in elementary occupations, holding other factors constant. This outcome was statistically significant at a 10% significance level. Holding other factors constant, adults that worked in professional occupations were 41.55% more likely to be satisfied with life relative to adults that worked in elementary occupations. This indicates that, for adults who worked in elementary occupations, a relatively lower life satisfaction may have been an intermediary determinant of their relatively high depression scores. Holding other factors constant, if income increases by 1%, the probability

that an adult was satisfied with life, increased by 22.13%. This was statistically significant at a 1% significance level.

Table 6-7: Random effects probit regression on self-reported/perceived health status as an intermediary determinant of depression

Explanatory Variables	dy/dx	Std Error
African	1	
White	0.2150	0.3219
Asian/Indian	0.2702	0.63
Coloured	0.2287	0.1623
Elementary occupation	1	
Plant and machinery occupation	0.3198**	0.1431
Technician occupation	0.7218*	0.3755
Professional occupation	0.2698	0.2064
Log per capita income	0.2205***	0.0777
Male	1	
Female	0.0908	0.133
Sample size=1284		
Prob>Chi-squared=0.0023		

Source: Author's own calculations using NIDS data

***Significance at 1%; **Significance at 5%; *Significance at 10%

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Self-rated/perceived health in the regression above is taken as a dichotomous variable. If the self-rated health of an adult was at least good (on a scale of excellent to poor), we define their self-rated health status as "good" health. If self-rated health was "poor" or "fair", we defined their self-rated health status as "not good". Holding other factors constant, adults that worked in plant and machinery were 31.98% more likely to have a "good" self-rated health, relative to adults that worked in elementary occupations. This was statistically significant at a 5% significance level. Holding other factors constant, adults who worked as technicians were 72.18% more likely to have a "good" perceived health status. This was statistically significant at a 10% significance level. This indicates that for adults in elementary occupations, a perceived health status that was not good may have been an intermediary determinant of their relatively high depression scores. Holding other factors constant, if income increased by 1%, the probability that an adult had a good perceived health status, was 22.05% higher. This was statistically significant at a 1% significance level.

Table 6-8: Random effects probit regression on the neighbourly trust (social cohesion) as an intermediary determinant of depression

Explanatory Variables	dy/dx	Std Error
African	1	
White	-0.1995	0.1744
Asian/Indian	0.6748	0.4923
Coloured	0.5133**	0.1471
Elementary	1	
Plant and machinery	0.1767	0.1213
Technician	0.0286	0.2214
Professional	-0.1075	0.15171
Log per capita income	-0.1199***	0.05854
Male	1	
Female	-0.0169	0.0991
Sample size=1284		
Prob>Chi-squared=0.0003		

Source: Author's own calculations using NIDS data

***Significance at 1%; **Significance at 5%; *Significance at 10%

In the regression above we define the endogenous variable as a dichotomous variable. The endogenous variable considers the probability that a neighbour would return a wallet containing R200. If the neighbour was somewhat likely or very likely, we will define the outcome as likely. The alternate outcome is not likely. Holding other factors constant, coloured adults were 51.33% more likely to trust that their neighbour would likely return the wallet with the R200 relative to Africans. This was statistically significant at a 5% significance level. This indicates perhaps that an intermediary determinant of the relatively high depression scores among Africans was a lower neighbourhood trust/ low social cohesion. Holding other factors constant, if income increased by 1%, the probability that an adult perceives that it is likely that their neighbour would return a wallet containing R200, decreases by 11.99%. This was statistically significant at a 1% significance level.

We therefore find that for Africans, a relatively higher probability of being depressed may be as a result of some selected intermediary determinants. These include, a relatively lower life satisfaction, a relatively higher likelihood of having heart problems, and relatively lower social cohesion in their neighbourhood. These intermediary determinants are linked to structural determinants such as socioeconomic status. Therefore a relatively lower socioeconomic status

among Africans increases their vulnerability to heart problems, contributes to a lower life satisfaction and relatively lower social cohesion in their neighbourhoods. Accordingly, these end up increasing the depressive symptoms experienced by Africans relative to other population race groups.

We were not able to find the intermediary determinants that lead to inequity in depression outcomes among males and females. The results for the regressions above for females were all statistically insignificant. We, however, hypothesise that, if variables related to neighbourhood violence were included in the regression, then we may have found this to be an intermediary determinant of depression. The reason we find this plausible is because of our earlier findings that indicated fear was a depressive symptom that was more common among women in South Africa.

Adults who worked in elementary occupations had a relatively higher probability of being depressed as a result of some selected intermediary determinants. These include a relatively higher probability of experiencing heart problems, a lower probability of being satisfied with life, and a relatively higher probability of having self-rated health that was not good. These intermediary determinants were linked to structural determinants such as socioeconomic status. Therefore a relatively lower socioeconomic status among adults that worked in elementary occupations may have increased their vulnerability to heart problems, contributed to a lower life satisfaction and a poorer perceived health status. These determinants may also be linked to the working conditions of the workers or the low autonomy associated with their occupation. This is further reinforced by studies by Perry (1996:6-7), who links occupations with low personal autonomy to a higher vulnerability to mental disorders. Subsequently the intermediaries discussed end up increasing the depressive symptoms experienced by adults with a low occupational status; namely, adults working in elementary occupations, relative to adults the depression outcome of adults working in higher rated occupations.

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6.5 Conclusion

The chapter presented structural and intermediate determinants of depression. The results indicated that a negative association existed between socioeconomic status and the probability that an individual was depressed. Broader social correlates of depression indicated that females were more likely to be depressed than males. The marginal effects were more pronounced for this outcome at a higher depression intensity level. Africans were more likely to be depressed relative to the other

population race groups, with the greatest disparity between white and African adults. In terms of geographical areas, adults the resided in traditional areas were the most likely individuals to be depressed.

A negative association was found between perceived health status and the probability of being depressed. That is, adults who perceived their general health be closer to excellent were less likely to be depressed. Higher levels of social cohesion being linked to a lower likelihood of being depressed was a strong and consistent finding at both the 10 and 15 depression threshold. We were also able to identify various intermediate determinants of depression. A lower life satisfaction, higher probability of having heart problems, and lower social cohesion contributed to the relatively high depression prevalence among Africans. We also found that a lower life satisfaction, higher probability of having heart problems and lower perceived health status contributed to the relatively high depression prevalence among adults who worked in elementary occupations. Overall we found that structural determinants of depression such as occupational status and race were linked to intermediary determinants of depression such as social cohesion, and biological factors (heart problems).

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Chapter 7 : Conclusion

7.1 Introduction

Mental health is an important aspect in the overall well-being of a person. The social determinants of health are aspects that affect the overall health of an individual and thus affect the mental health status of a person. The WHO's CSDH framework is therefore an excellent theoretical framework for assessing the determinants of depression as well as better understanding the nuanced factors that play an integral role in mental health disparities in the South African context. This chapter will discuss the overall findings of the study in the context of prior studies conducted.

7.2 Main Findings

The study aimed to the answer the question of which social determinants of health significantly contributed to the depressive symptomatology experienced by adults in South Africa? The specific objectives the study set were: to investigate the prevalence and distribution of depression in South Africa using two waves of NIDS (2008 and 2014/2015), to review the trends of depression in South Africa over the four waves of NIDS, to investigate the socio-demographics of adults who were depressed in both waves 1 and 4 of NIDS, and lastly to assess the link between socioeconomic status as part of the broader social determinants of health to depression using two waves of NIDS (2008 and 2014/2015). The study used the CES-D-10 tool to measure depression among adults. It is important to restate the self-reported nature of the tool, which may bias the results. We however find that the validity and reliability of the tool is adequate to assess depression and begin to understand how depression relates to the social environment.

The prevalence of depression in South Africa using the CES-D with a threshold of 10 was 33.15% in 2008, which later declined to 26.05% in 2014/2015. The prevalence of depression found by our study was largely within the range of studies by Patel & Kleinman (2003:2) on 11 low to middle income countries, which ranged the prevalence of depression to between 20% and 30%. In terms of the trends of depression in South Africa, we find that, although the prevalence of depression was lower in 2014/2015 compared to 2008, the recent steady rise in the prevalence of depression is alarming. Furthermore a depression prevalence rate of 26.05% is still significantly high. It is however important to note that the results are also dependent on the threshold of depression one chooses to use. This study used the threshold of 10 as this is the recommended threshold by Radloff

(1977) and used by other studies assessing depression using NIDS. The study therefore, concludes that the prevalence of depression in South Africa is markedly high. It also concludes that the distribution of depression in South Africa suggested an overrepresentation of women and Africans.

It is important to note that some resilience is built from the difficulties experienced by adults living in poor socioeconomic conditions. Adults who lack such resilience may find themselves part of the 6.91% of adults in South Africa who are chronically depressed. Most of the chronically depressed live in Gauteng and Kwa-Zulu Natal. Furthermore, the geographical area type, in which most of the chronically depressed resided, was urban areas. Gender and race differences were also observed among the chronically depressed. The more depressed population in South Africa was women (63.11%), as opposed to men (36.89%) in 2008. In 2014/2015 more of the depressed population was still women (55.3%) as opposed to men (44.7%). What is interesting is the gender difference that existed when assessing chronic depression. The proportion of chronically depressed women (68.04%) exceeded men (31.96%) by a greater margin than the above depression figures for 2008 and 2014/2015. This indicated women clearly suffered more from chronic depression relative to men. In terms of race, Africans were overrepresented among the chronically depressed. The study further found that, when interacting between gender and race, African women made up an astounding 61.09% of the chronically depressed population. The study therefore identified African women as a particularly vulnerable group to depression.

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It was evident from the literature that depression followed a social gradient. That is, adults who had a lower socioeconomic status were more likely to be depressed relative to adults with a higher socioeconomic status. The distribution of depression, therefore, is not equal and in fact adults from a poorer socioeconomic background are more likely to show significant depressive symptomatology. The study found that women overall had a lower socioeconomic status relative to their male counterparts. The income disparity between males and females was a key finding. We would therefore expect women to have a greater likelihood of being depressed. This was indeed the outcome, females were 15.94% more likely to be depressed than males when only controlling for gender, race and geographical area variables. When controlling for all variables at a CES-D threshold of 15, females were 37.05% more likely to be depressed than their male counterparts holding other factors constant. This means that females stay in depression for longer periods and that there symptoms are more severe.

In terms of socioeconomic status the random effects probit regression results indicated that in fact, income did significantly contribute to determining depression. When only controlling for socioeconomic status variables, we found that increases in income were associated with significant declines in the probability of being depressed. Specifically, a 1% increase in income was associated with an 11.45% decline in the probability of being depressed. One may consider this to be expected, as some of the depressive symptoms experienced could be linked directly to one's socioeconomic situation; for example, due to not being able to adequately meet one's basic needs. The study therefore found a negative association between socioeconomic status and depression, and we conclude that furthermore, this finding was in agreement with prior studies which found a social gradient when assessing the distribution of depression.

Adults that resided in urban and traditional geographical areas were found to be more likely to be depressed relative to adults who resided on farms. Even though urban areas are found to have better opportunities in terms of employment and schooling, the wealth of opportunities is not shared equally. In fact, in South Africa a significant proportion of low income adults live on the outskirts of urban areas, where high crime and poverty rates are substantial negative contributors to their emotional health. The majority of adults who live in these impoverished conditions are Africans. This study found that depressive symptoms that African faced included feelings of everything being an effort, and being unhappy. This is further reinforced by figure 4-3 and 4-4, which describe the distribution of depression by depressive symptomatology.

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The results suggest that feelings of hopelessness about the future are one of the most common depressive symptoms experienced by adults in South Africa. The emotional stress faced by the poor as a direct result of their socioeconomic lack is reason enough to understand why there are protests for the better provision of services, such as better policing and housing. The narrative portrayed of the protesters rarely mentions how the socioeconomic difficulty of being poor has affected their emotional well-being to that point that protest action may be an overspill of the feelings of hopelessness about the future.

Improvements have been made in alleviating depression among vulnerable groups. A lower proportion of the depressed population was female in 2014/2015, compared to 2008. In addition, a slightly lower proportion of the depressed population was African in 2014/2015, compared to 2008. Greater equality occurred in 2014/2015 in the distribution of depression among various

education categories, which can be seen in table 6-1 , which shows the socio-demographics of the depressed. Social inequality, however, still persists, which suggests that inequality in the distribution of depression will persist as well.

Social capital could not be analysed in the random effects probit regression as questions regarding social capital were only asked in waves 1 and 2 of NIDS. We did however analyse how social capital related to depression in terms of depression intensity levels. The findings suggest that higher levels of social capital were associated with lower levels of depression. This finding was in agreement with the literature that social capital is an important factor in protecting against depression. The financial and emotional support that an individual receives protects them from depressive symptoms that isolated individuals may struggle to cope with by themselves. This is especially important when individuals experience negative life events, which were found to be associated with high intensity levels of depression. That is, the greater the number of negative life events an individual experienced, the higher the intensity level of depression they experienced. Individuals who are unable to cope with these negative life events may abuse negative substances such as drugs and alcohol. The study found an overconsumption of alcohol occurring among adults that experienced higher frequencies of depressive symptoms, thus reconfirming the positive relationship between alcohol abuse and depression.

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Despite being unable to econometrically assess social capital in the panel, we were able to investigate how social cohesion could be related to depression and whether it was significant. This was an important social determinant as neighbourhoods that have trust are neighbourhoods where we might expect individuals to be less fearful, as well as better able to engage with fellow neighbours and strangers in their environment.

The results from the study suggest that social cohesion was in fact significant in determining depression. Adults who believed that it was very likely that a stranger would return a wallet containing R200 were 60.86% less likely to be depressed, relative to adults who believed that it was not likely for the wallet and money to be returned. Further analysis would have had to be performed to assess whether this is in fact is because adults with a better emotional well-being live in neighbourhoods where there is strong social cohesion. Alternatively, this could be because adults who are depressed are less likely to be trust people to be altruistic and take the money for

themselves. We therefore, do not know whether this character trait may play some role in the result.

Adults who were less satisfied with life showed higher intensity levels of depression. This finding could not be stated in a causal manner from the study, as the relationship could run in both directions. That is, adults who showed higher intensity levels of depression, could as a result be less satisfied with life. Perceptions of one's well-being therefore, matter in the determination of an individual's mental health. A significant proportion of adults may not be seeking assistance from mental health facilities, because they do perceive their general health as a problem. The study, shockingly, found that roughly a quarter of the depressed population regarded their general health status as excellent. This could be because people may only be factoring in their physical health status and not considering their mental health. Mental health is, however, crucial to an individual's overall well-being and should always be factored in when considering the general health of an individual.

Other socio-demographic correlates of depression assessed included age and household size. Adults who resided in large households on average showed higher intensity levels of depression, relative to those that resided in households with fewer people. Age was found to be negatively associated with emotional health. The bar graph that was depicted in figure 4-5 showed an increase in depression scores in adults aged 40-64 relative to adults aged 18-39. As adults age, they become susceptible to physical health problems, particularly those referred to as older adults.

Physical health problems are of a serious concern when determining depression. Prior studies indicate that adults with physical health problems were more likely to experience depressive symptoms and become depressed. This study found that adults with physical health problems on average had higher depression scores than the average adult. In particular, adults with Stroke and Cancer problems had the highest depression scores. This indicated that stroke and cancer problems were the most significant physical health contributors to a poor emotional well-being. In fact, the average depression score for stroke sufferers was above 10 in both 2008 and 2014/2015, which indicates that the average stroke sufferer was depressed. Depending on the intensity of the stroke, strokes may leave individuals paralysed and effectively disable an individual from participating in everyday life as well as remove their personal autonomy, which is very closely associated

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emotional health. Subsequently, stroke sufferers may feel helpless to some extent and as a result exhibit significant depressive symptoms.

The study also identified selected intermediary determinants of depression. A lower life satisfaction, higher probability of having heart problems, and lower social cohesion contributed to the relatively high depression prevalence among Africans. A lower life satisfaction, higher probability of having heart problems and lower perceived health status contributed to the relatively high depression prevalence among adults who worked in elementary occupations. Overall we found that structural determinants of depression such as occupational status and race were linked to intermediary determinants of depression such as social cohesion, and biological factors (heart problems). In addition, the intermediary determinants acted directly on depression whilst the structural determinants made an indirect contribution to depression. Accordingly, inequity in the structural determinants of depression led to inequity in the intermediary determinants of depression, which consequently led to disparities in depression outcomes.

This type of inequity needs to be addressed through inter-sectoral social justice interventions.

5.3 Policy Recommendations

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Government ought to seriously consider and better implement the WHO's CSDH framework. Inter-sectoral approaches are important, as mental health has been demonstrated by the study to not begin and end with health. We refer to the inter-sectoral approach as a collaborative effort from different government levels and departments. This is meant to relieve the mental health burden from the health sector as the problem as proven in this study relates to factors outside of the health sector. Mental health outcomes are in fact a product of the social environment that exists in a country. Therefore various departments ought to engage on matters that relate to mental health with particular attention paid to depression.

Pragmatically, this could be done in two ways:

Government could focus on vulnerable/ at-risk groups of people and formulate strategies centered on these groups. Some of the vulnerable include women, Africans, people with physical health problems; particularly stroke, diabetes and heart problems, and lastly those living in poverty.

This approach should firstly include strategies to improve the educational attainment of the vulnerable as well assisting with opportunities for them to meet their immediate basic needs. Socioeconomic interventions are therefore important in order to improve the mental health of the socioeconomically disadvantaged. However a focus on socioeconomic status does not suffice and a further focus on social inequality, as suggested by Liang et al. (2012), through policies on social justice would be important as they would not focus on the individual but systemic inequalities that have in fact contributed significantly to the current emotional well-being of adults in South Africa. In addition ensuring that vulnerable groups have access to quality mental and physical health care would be important especially with the large mental health treatment gap that exists in South Africa. Heart problems, which were identified as an intermediary determinant among Africans, need to be addressed by encouraging emotional counselling for patients with heart problems.

The second approach would be an area-based approach. Individual-based measures such as income, occupation and education are important in relating socioeconomic status to disparities in health outcomes. However it may also be useful to consider area-based measures. Area-based measures are also useful in that they allow inequalities in health outcomes to be tracked by spatial locations (Public Health Ontario, 2013:10). Furthermore area-based measures allow for the inclusion of factors that are not captured by individual level measures such as access to resources as well as social issues affecting certain communities (Public Health Ontario, 2013:10). In the case of depression, community level factors such as crime, and limited access to health facilities may influence people living in certain communities more than other communities. For example, holding income constant, person A may be living in Hanover Park whilst person B is living in Grabouw. The mental health outcomes of people living in person A's neighbourhood may be negatively affected mostly by crime, gangsterism, neighbourhood violence and overall low social cohesion. On the other hand, the mental health outcomes of people living in person B's neighbourhood may be negatively affected mostly by sanitation problems and a lack of access to general health facilities. Assessing individual level factors only may not give policymakers sufficient information. This clearly indicates that differences in mental health outcomes are not always captured by individual level socioeconomic status variables. For government to intervene, an indication that crime is a huge contributor to depression for people living in person A's neighbourhood is quite specific and may be useful for government. An area-based assessment is

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therefore useful in its ability to inform policymakers particularly at a local government level (Public Health Ontario, 2013:10).

The movement towards a decentralised/ deinstitutionalised mental health care as well as a mental health care system that is part of primary care has been slow. The expected benefits, such as disadvantaged patients not having to travel sometimes long distances in order receive treatment, cannot be realised if the facilities do not provide a quality service. Another expected benefit is that patients would be able to receive more specialised care at a community based-care facility. However, in South Africa it has been a challenge because there are not enough trained professionals and a lack of financial resources to support an increase in staff (Marais & Petersen, 2015:9).

A movement away from institutionalising mental health care patients is argued to reduce stigma; however stigma still exists and acts as a strong barrier for mentally affected adults. In addition, a lack of anti-stigma campaigns is a problem that needs to be addressed (Marais & Petersen, 2015:12). Lastly, mental health should not be separate from the discussion on health. The integration of mental health care as part of primary care would have significant benefits. Improvements in the health system in terms of technology and funding would subsequently benefit mental health care. In addition, the overlapping effects of physical health on mental health as shown in the study necessitate greater integration and collaboration between various health faculties in working towards better health for all.

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Appendices

Appendix A1

The key below describes the variables analysed in the study.

Table A-0-1: Key

Key			
Educational Attainment	-9	Don't Know	
	-5	Not Applicable	
	-3	Missing	
	0	Grade R/0	0
	1	Grade 1/Sub A/Class 1	1
	2	Grade 2/Sub B/Class 2	2
	3	Grade 3/Std. 1	3
	4	Grade 4/Std. 2	4
	5	Grade 5/Std. 3	5
	6	Grade 6/Std. 4	6
	7	Grade 7/ Std. 5	7
	8	Grade 8/ Std. 6/Form 1	8
	9	Grade 9/Std. 7/Form 2	9
	10	Grade 10/ Std. 8/Form 3	10
	11	Grade 11/ Std. 9/Form 4	11
	12	Grade 12/Std. 10/Form 5/Matric/Senior C	12
	13	NTC 1	10
	14	NTC 2	11
	15	NTC 3	12

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	16	Certificate with less than Grade 12/Std	11
	17	Diploma with less than Grade 12/Std 10	11
	18	Certificate with Grade 12/Std 10	13
	19	Diploma with Grade 12/Std 10	13
	20	Bachelors degree - Level 4	15
	21	Bachelors degree and Diploma	16
	22	Honours degree	16
	23	Higher degree (Masters Doctorate)	17
	24	Other	18
	25	No Schooling	0
Perceived health status	Categorical (Poor=5)(Fair=4)(Good=3)(Very Good=2)(Excellent=1)		
income	Log (Per capita income per month (in Rands))		
Female	Binary outcome: Female Yes=1 No-0 Male Yes=1 No=0(left out as reference group)		
African	African: Yes=1 No=0 (left out as reference group)		
Coloured	Coloured: Yes=1 No=0		
Asian_Indian	Asian_Indian: Yes=1 No=0		
White	White: Yes=1 No=0		
Traditional	Rural: Yes=1 No=0		

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Urban	Urban: Yes=1 No=0
Farm	Farm: Yes=1 No=0 (left out as reference group)
Age	Age (in years)
Negative life events	The number of negative life events experienced in the past 24 months
Occupation	Occupational code by Skill level
Marital Status	Married, Living with Partner, Widowed, Divorced/Seperated, Never Married

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Appendix A2

Attrition analysis

The tables below relate to the attrition analysis that is performed in the methodology. This appendix contains the BGLW test as well as the attrition probit regression.

Table A-0-2: BGLW test

Test Parameters	d.f	Probability
Is attrition random for depression	F(15, 356)	0.3682

Source: NIDS 2008 and 2014/2015 (authors own calculations)

Table A-0-3: Attrition probit regression

Explanatory variables	dF/dx	Std Error
Age	-0.0197***	0.0064
Age squared	0.0002**	0.0001
Negative life events	-0.0605	0.0578
Race		
African	1	
White	0.2463***	0.0450
Coloured	-0.0703**	0.0317
Asian/Indian	0.1364**	0.0655
Geographical Area type		
Rural[8]	1	
Urban	0.0147	0.0294
Perceived Health status		
Excellent	1.0000	
Very Good	-0.0160	0.0261
Good	-0.0518*	0.0306
Fair	-0.0501	0.0466
Poor	-0.0349	0.0760
Gender		
Male	1	
Female	-0.0850***	0.0240
Socioeconomic status		
Occupational code	-0.0144	0.0135
Log per capita income	0.0662***	0.0173
Log educational attainment	-0.1061***	0.0353
Trust neighbour		

[8] We condensed Traditional and Farm geographical area types into 'Rural'.

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Not likely	1	
Likely	-0.0179	0.0342
Trust Stranger		
Not likely	1	
Likely	0.0382	0.0399
Number of Observations=1876		
Pseudo R-squared=0.0581		

Source: NIDS 2008 and 2014/2015 (authors own calculations)

***Significance at 1% **Significance at 5% *Significance at 10%

The regression above describes attrition in the dataset. As the age of an adult increases by 1 year, ceteris paribus, the probability that the adult was an attritor declined by 1.97%. This was statistically significant at a 1% significance level. The age squared variable indicates that the inverse effect of aging on being an attritor gets stronger as adults get older. White adults were more likely to be attritors relative to Africans. On average, White and Asian/Indian adults were 24.63% and 13.64% more likely to be attritors relative to Africans. This was statistically significant at a 1% and 5% significance level respectively. In addition, coloured adults were 7.03% less likely to be an attritor relative to Africans. This was statistically significant at a 5% significance level. Relative to adults with an excellent self-rated health, the probability of being an attritor was 5.18% lower if an individual had a good self-rated health status. This was statistically significant at a 10% significance level. Females were 8.50% less likely to be attritors relative to males. This was statistically significant at a 1% significance level. Holding other factors constant, if the per capita income of an adult increased by 1%, the probability that they were an attritor increased by 6.53%. This was statistically significant at a 1% significance level. If the educational attainment of an adult increased by 1%, ceteris paribus, the probability that the adult was an attritor declined by 10.61%. This outcome was found to be statistically significant at a 1% significance level.

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Appendix B1

The Socioeconomic Well-Being of Adults in South Africa

In this appendix we describe the socioeconomic well-being of adults in South Africa. This appendix contains three sections. Firstly, socioeconomic status is described. This is followed by a characterization of the perceived health status of adults in South Africa. Lastly, we describe the negative life events experienced by adults in South Africa.

Socioeconomic status (Education, Income, Occupational status) in South Africa

One of the key factors that affect the mental health of individuals is socioeconomic status. Socioeconomic status can be broken down into three components, namely; education, income and occupation. This section assesses socioeconomic status across genders and population race groups. The social stratification of these groups has been found in the literature to be linked to health disparities. The aim of this is to better understand the socioeconomic standing of various groups in the South African context. This will be important for later in the chapter when socioeconomic status is linked directly to depression.

Gender

The socioeconomic status of women was slightly better than that of men. On average, women had a higher educational attainment level than men in both 2008 and 2014/2015. Women also had a better occupational status for their primary occupation relative to men. On the other hand, men had higher per capita incomes than women despite having fewer years of education completed and working in lower skilled occupations. It is, however, important to note that unemployment was not taken into account as a socioeconomic status variable. The relevance of this is that more women are unemployed in South Africa relative to men (Ranchod, 2009:2). This negatively affects the ability of women to command resources. South Africans are however seeing increased rates of labour participation among women as well as a trend of increasing educational attainment among women, not only in South Africa but internationally (Leibbrandt, Woolard, McEwen & Koep, 2010:7).

Figure B-0-1: Average educational attainment by gender in 2008 and 2014/2015 (years)

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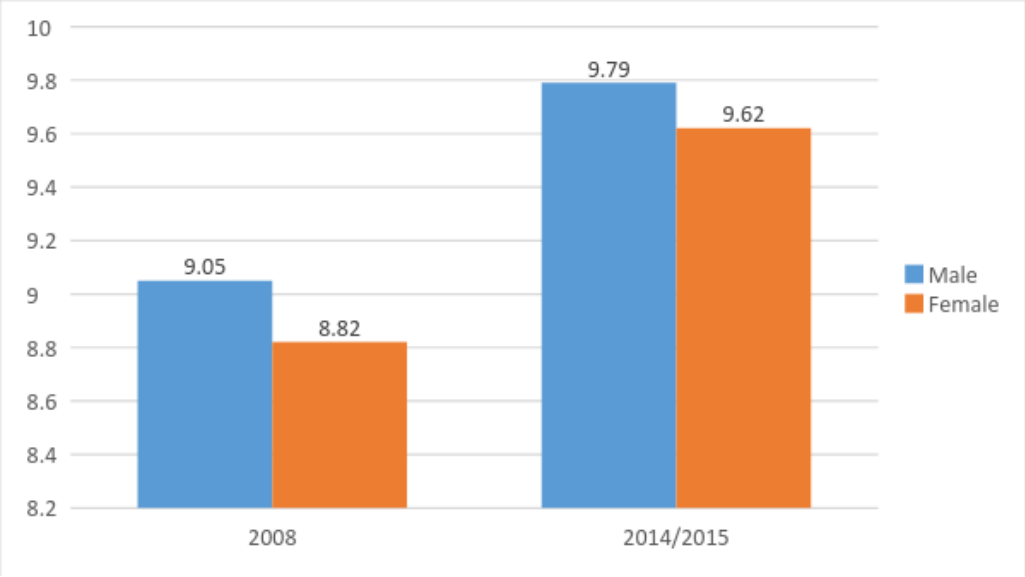

Source: NIDS 2008 and 2014/2015 (author's own calculations)

Figure B-0-1 above describes the educational attainment of males and females. The graph indicates that the average educational attainment level for males and females was 9.05 years and 8.82 years respectively in 2008. These figures increased to 9.79 years and 9.62 years in 2014/2015 for males and females respectively. Males had a higher educational attainment level than females in both 2008 and 2014/2015.

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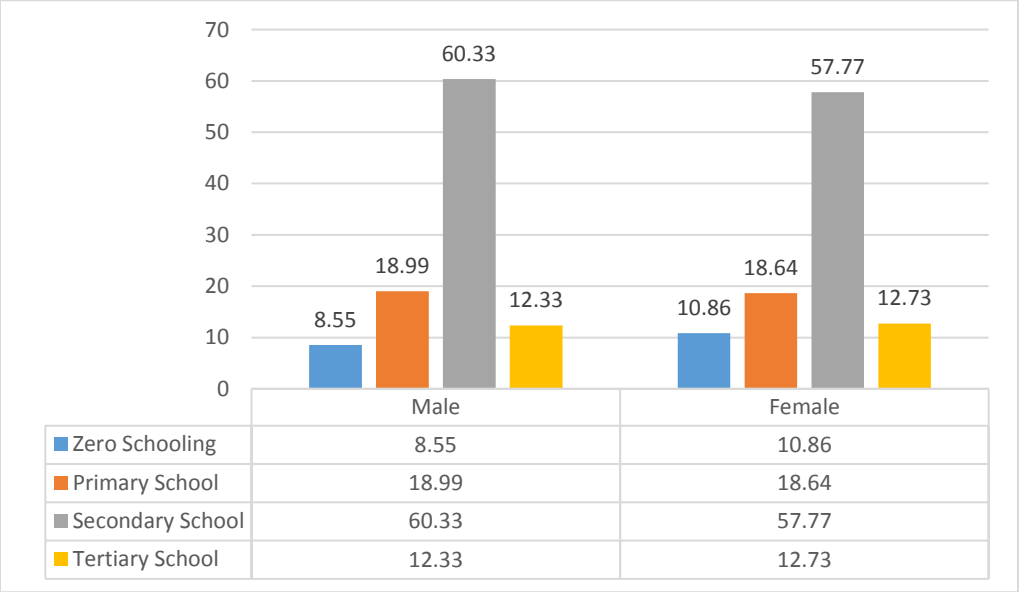
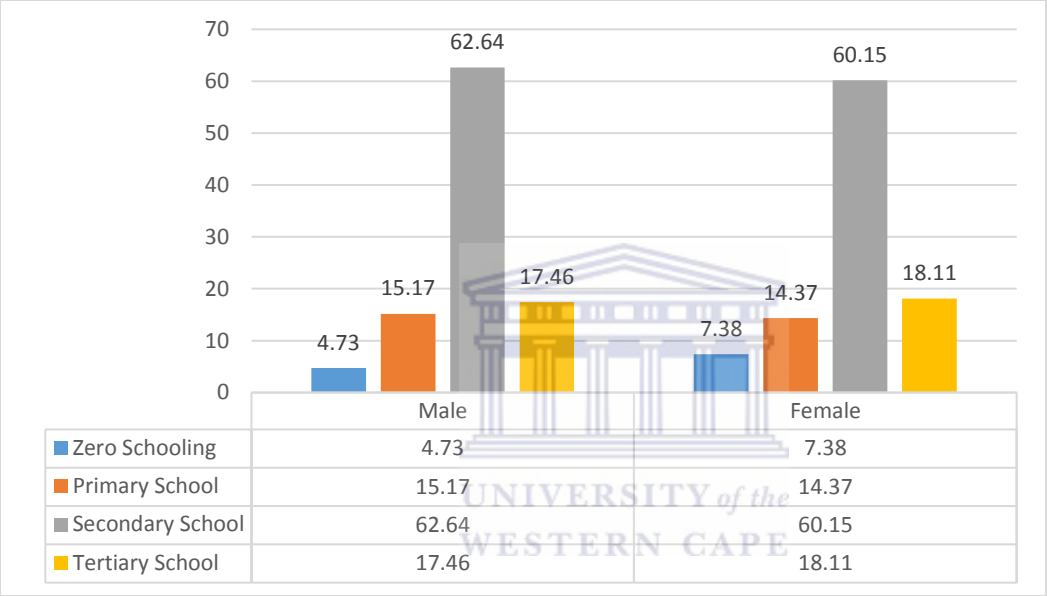
Figure B-0-2: Categorical educational attainment by gender in 2008 (%)



Source: NIDS 2008 (using author's own calculations)

Figure B-0-2 above further indicates the educational attainment of males and females in 2008. The figure above describes educational attainment categorically. We find that 8.55% and 10.86% of males and females respectively had no schooling. We also find that a greater proportion of males than females had primary school and secondary school. Interestingly, 12.73% of females had a tertiary education qualification compared to 12.33% of males that had a tertiary education qualification.

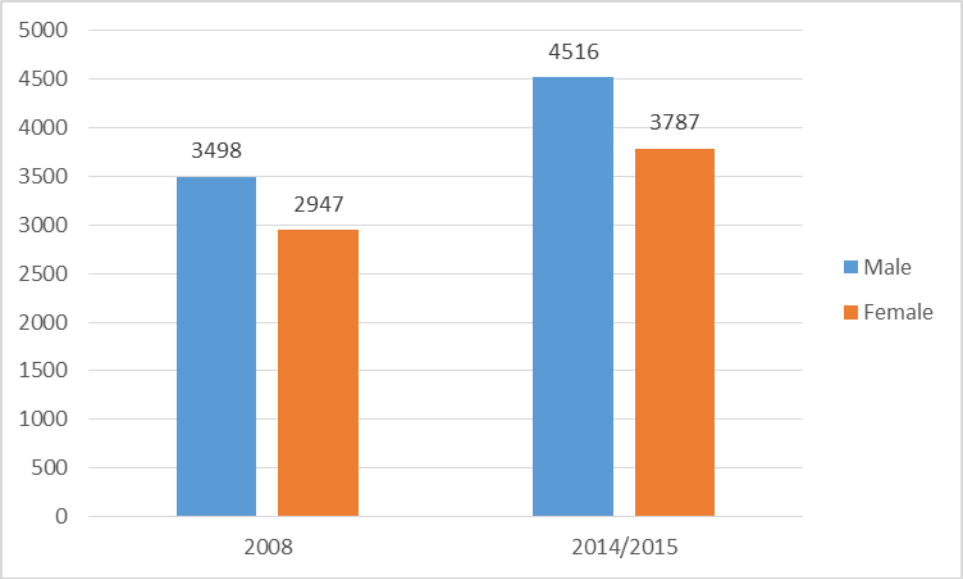
Figure B-0-3: Categorical educational attainment by gender in 2014/2015 (%)



Source: NIDS 2014/2015 (using author's own calculations)

Figure B-0-3 above further indicates the educational attainment of males and females in 2014/2015. The figure above describes educational attainment categorically. The graph shows that 4.73% and 7.38% of males and females respectively had no schooling. This indicates that fewer adults in 2014/2015 had no schooling relative to 2008. Another finding is that 15.17% and 14.37% of males and females respectively had only completed primary school. These proportions were lower than the proportions for 2008, who had only completed primary school. This clearly indicates an increase in educational attainment for adults in South Africa. Similar to 2008, more females (18.11%) had a tertiary school qualification relative to males (17.46%).

Figure B-0-4: Average per capita income (rands) in real terms by gender in 2008 and 2014/2015



Source: NIDS 2008 and 2014/2015 in 2008 prices (author's own calculations)

Figure B-0-4 above illustrates the average per capita incomes of males and females in real terms in 2008 prices. The results indicate that in both 2008 and 2014/2015, males on average had higher per capita incomes than females. The disparity in income between males and females is distinctly larger in 2014/2015. The result may indicate wage discrimination playing a role as well as societal constructs that prevent women from earning more income. For example, more women, despite their educational attainment level, are primary caregivers for their children. As a result they sometimes exit the labour force for some time to nurture their children whilst their male partners continue participating in the labour force. During this period away from the labour force their male counterparts may be moving up the corporate ladder and as a result the disparity in income may be further exaggerated.

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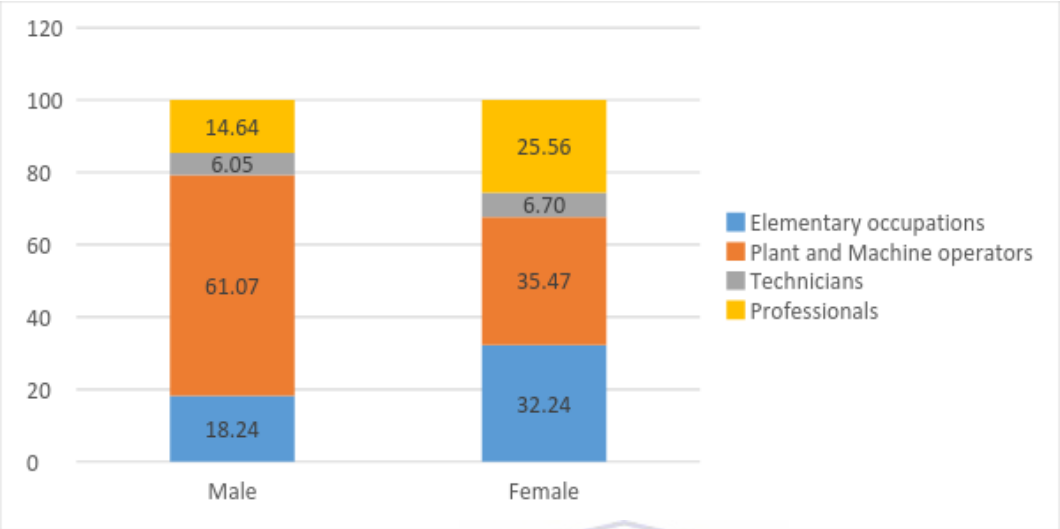
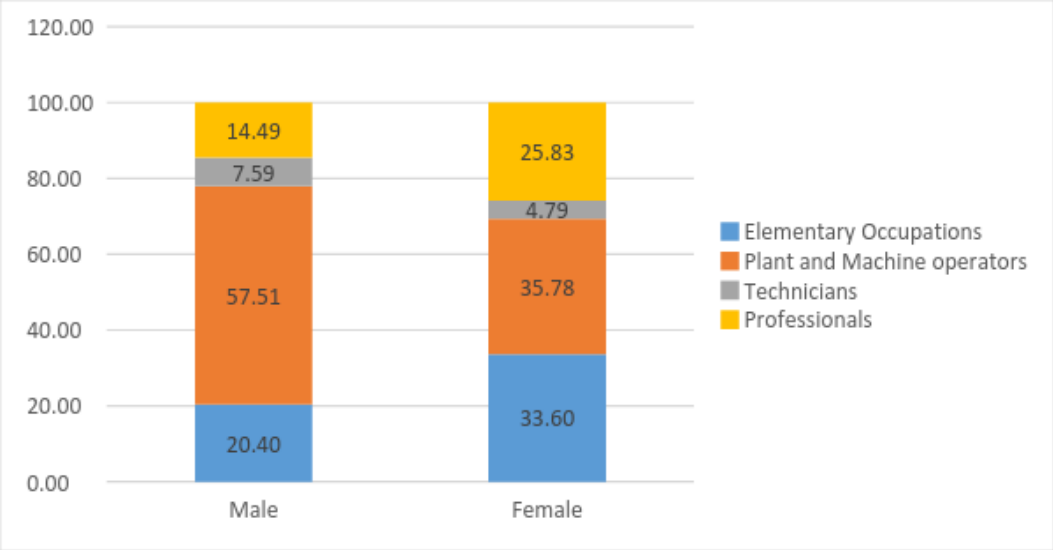
Figure B-0-5: Gender comparison of occupational status distribution in 2008 (%)



Source: NIDS 2008 (author's own calculations)

Figure B-0-5 above describes the proportion of males and females that worked in the various occupational categories in 2008. The majority of males worked as plant and machine operators in 2008. That, is 61.07% of male's primary occupation was in plant and machinery. Females were more widely distributed in occupations. The major split was between elementary occupations and plant and machine operating. That is, as their primary occupation, roughly a third of females worked in elementary occupations and slightly more than a third in plant and machinery.

Figure B-0-6: Gender comparison of occupational status distribution in 2014/2015 (%)



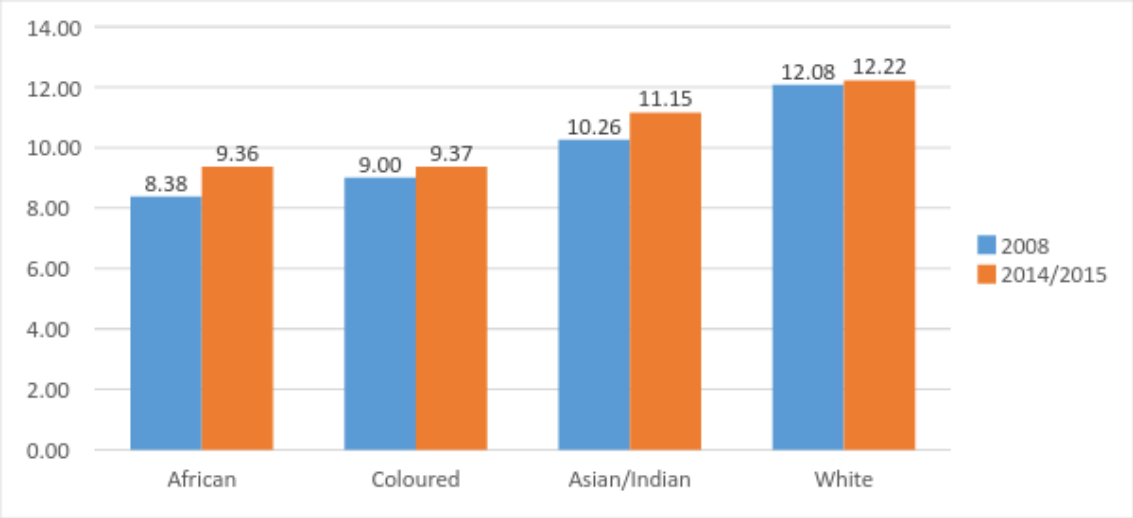
Source: NIDS 2014/2015 (author's own calculations)

Figure B-0-6 above describes the proportions of males and females that worked in various occupational categories in 2014/2015. The majority (57.51 %) of males still worked in plant and machine operating in 2014/2015. The occupations of females were similar to that of 2008 as slightly more than a third of females worked in elementary occupations. Furthermore, slightly more than a third of females worked in plant and machine operating. Overall the results were mixed and it is hard determine which gender was better off in terms of occupational status. The structural nature of the type of skill category an individual is in plays an important role in why differences between 2008 and 2014/2015 are not large.

Race

The historical context of South Africa relayed in chapter two in terms of the systemic oppression of non-white South Africans plays an integral role in the social strata of people living in South Africa today. Africans and coloureds were found to be the worst off in terms of income, educational attainment and occupational status. Overall Africans were the lowest on the socioeconomic ladder. This impacts the ability of Africans to command resources and assets which are crucial in protecting against depressive symptoms. Consequently, accessibility to quality healthcare becomes a problem for coloureds and Africans in particular. In addition, the impoverished conditions in which Africans live may further deteriorate their social standing and lead to further depressive symptoms.

Figure B-0-7: Average educational attainment in 2008 and 2014/2014 by race (in years)



Source: NIDS 2008 and 2014/2015 (author's own calculations)

Figure B-0-7 above describes the average educational attainment levels of the various population race groups in 2008 and 2014/2015. Overall, across all population race groups the average educational attainment of adults in South Africa increased. The results also indicate that Africans on average had the lowest educational attainment level closely followed by coloureds. In contrast, white adults had an educational attainment that exceeded the other population race groups. As a result one would expect to find that Africans should have the lowest incomes as well as contribute the most to unemployment in South Africa.

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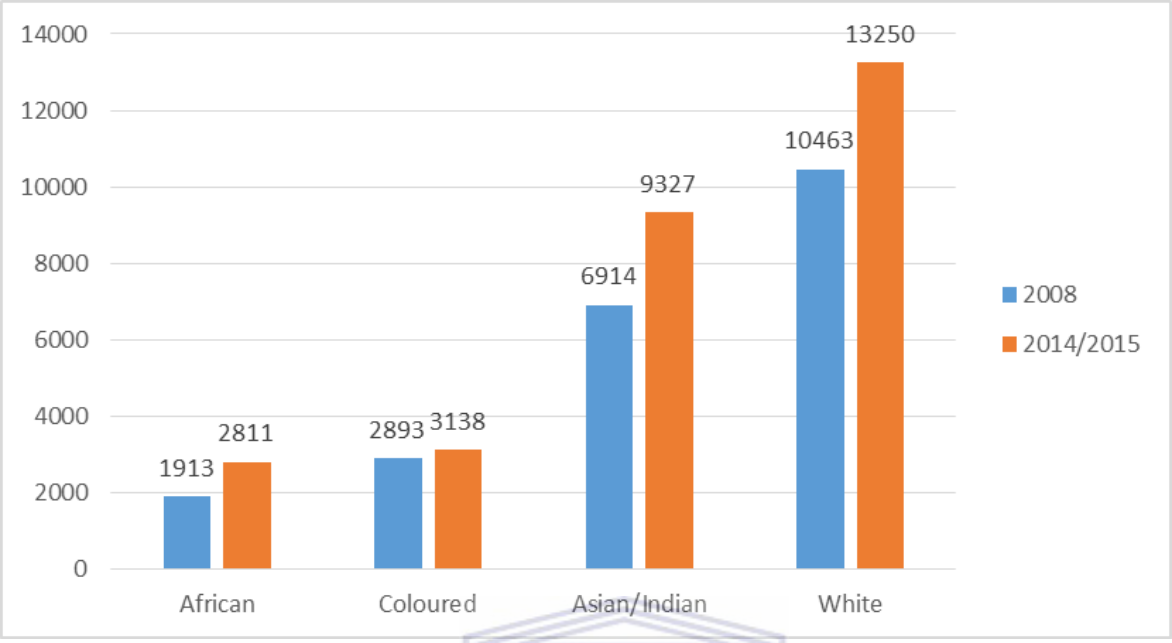
Figure B-0-8: Average per capita income (rands) in real terms by race in 2008 and 2014/2015



Source: NIDS 2008 & 2014/2015 in 2008 rands (author's own calculations)

Figure B-0-8 above describes the average per capita per month real income of adults in South Africa by race in 2008 rands. The average per capita income per month increased for most population race groups. The only decline was in the Asian/Indian group. On average, Africans had the lowest per capita incomes in both 2008 and 2014/2015. Africans earned R1913 and R2811 on average, per capita per month in 2008 and 2014/2015 respectively. Coloured adult income was slightly above that of Africans in both 2008 and 2014/2015. Asian/Indian and white adults on average had per capita income at least twice that of Africans and Coloureds. White adults on average had the highest per capita incomes per month.

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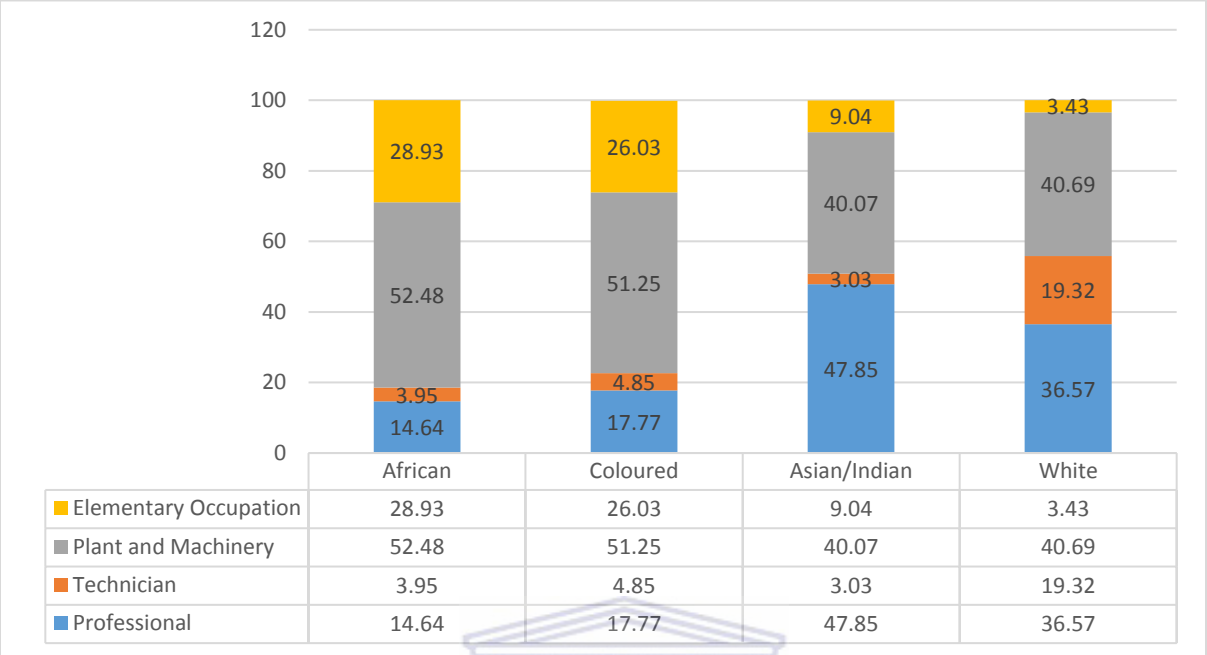
Figure B-0-9: Occupational status Race in 2008 (%)



	African	Coloured	Asian/Indian	White
Elementary Occupation	28.93	26.03	9.04	3.43
Plant and Machinery	52.48	51.25	40.07	40.69
Technician	3.95	4.85	3.03	19.32
Professional	14.64	17.77	47.85	36.57

Source: NIDS 2008 (author's own calculations)

Figure B-0-9 above describes the average occupational skill levels of adults by race in 2008. In 2008, the results indicate Africans had the lowest occupational status. The majority (81.41%) of Africans worked in elementary occupations or plant and machinery. White adults had the highest occupational status in terms of the skill level of their primary occupation. The figure shows that 55.89% of white adults worked as technicians or in professional occupations. Despite slight changes in the average skill level score, the overall trend persisted in 2014/2015 as in 2008.

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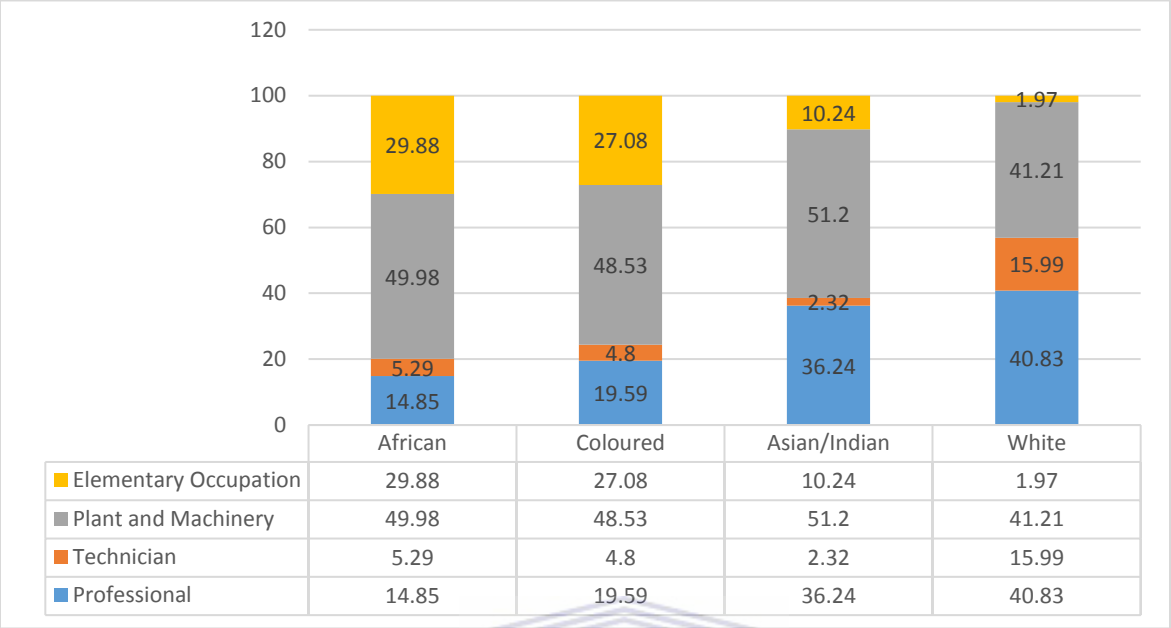
Figure B-0-10: Occupational status by race in 2014/2015



Source: NIDS 2014/2015 (using author's own calculations)

Figure B-0-10 describes the average occupational skill levels of adults by race in 2014/2015. In 2014/2015, the results indicate Africans had the lowest occupational status. The majority (79.86%) of Africans worked in elementary occupations (29.88%) or plant and machinery (49.98%). White adults had the highest occupational status in terms of the skill level of their primary occupation. We find that 56.82% of white adults worked as technicians (15.99%) or in professional occupations (40.83%). Despite slight changes in occupational status, the overall trend persisted in 2014/2015 as in 2008.

Overall, the socioeconomic status of Africans and women were the lowest. Subsequently, this means that they are more vulnerable to general health problems as well as mental health problems such as depression. More depressive symptoms may be experienced by these groups and thus it was critical identify them. We however need to assess other factors that impact the mental health status of adults as socioeconomic status is not the only determinant of depression among adults living in South Africa.

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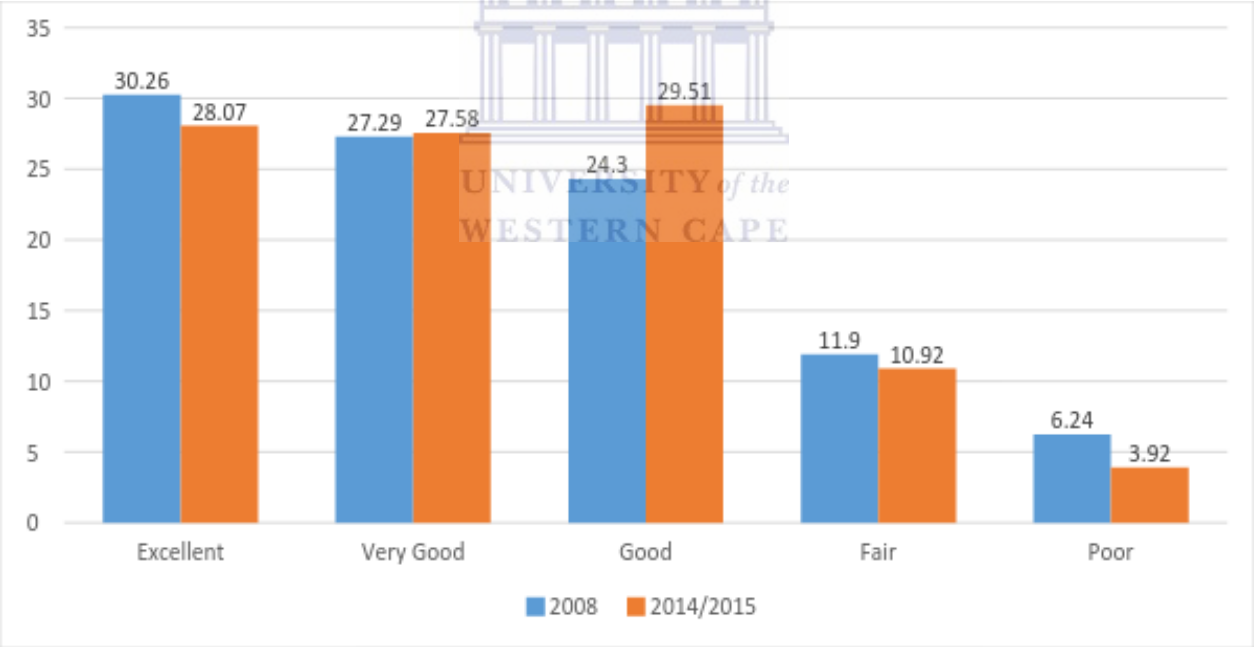
Perceived Health Status

Self-reported health is assessed in order to understand from a subjective view, the general health condition of the study participants. Individual perceptions of their general health may vary with socio-demographics and thus this section reviews differences in the way individuals perceive their general health status. Self-reported health is important to the broader discussion on depression as the overall health status of individuals are linked to their mental health. Furthermore, the perceptions of overall health may relay how people perceive their mental health as well. For example, individuals with an excellent overall health status may be more likely to perceive their mental health status as excellent as well. We therefore take particular note of the self-reported nature of the two health indicators. We note that adults perceived their health status differently across varying socio-demographics. We should subsequently expect differential depression outcomes across varying socio-demographics.

Figure B-0-11: Perceived health status 2008 and 2014/2015 (%)



Source: NIDS 2008 and 2014/2015 (author's own calculations)

Figure B-0-11 above shows that most of the study participants in 2008 perceived themselves to have a good to an excellent general health status. The table shows that 24.3%, 27.29% and 30.26% of adults in 2008 stated that their general health status was good, very good and excellent respectively. On the other hand 6.24% of the population had perceived their health status to be

poor. The bar graph further illustrates that most of the study participants in 2014/2015 also perceived themselves to have a good to an excellent general health status similar to 2008. In this period, 29.51%, 27.58%% and 28.07% stated that their general health status was good, very good and excellent respectively. On the other hand 3.92% of the population had perceived their health status to be poor in wave 4. Compared the wave 1, we can see similar overall outcomes in the perceived general health status of individuals. Fewer adults perceived their general health status to be poor. In addition, fewer adults perceived their general health status to be excellent. This indicates that the general health status of adults in South Africa varied less in 2014/2015 compared to 2008. This can be seen in the convergence of the results to the "good" and "very good" categories.

Table B-0-4: Perceived health status by race 2008 (%)

Perceived health status	African	Coloured	Asian/Indian	White	Total
Excellent	30.79	32.29	13.43	29.46	30.26
Very good	25.97	24.64	24.39	43.73	27.29
Good	24.33	20.55	42.73	21.99	24.3
Fair	12.43	13.3	13.39	4.99	11.9
Poor	6.49	9.23	6.07	0.93	6.24
Total	100	100	100	100	100

Source: NIDS 2008 (author's own calculations)

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Table B-0-1 above describes the distribution of the perceived health statuses of individuals in terms of their population race group. Despite 32.29% of coloureds describing their general health status as excellent, which was more than the other population race groups, 9.23% of coloureds indicated that their general health status was poor. This latter statistic was greater than found for other population race groups. It can be noted that out of the white population group the proportion of those that perceived their general health status to be poor was the least, relative to the other self-perceptions of the general health status of the white population group. Furthermore, fewer white adults perceived their general health status to be poor compared to the other race groups. On other hand, compared to African and coloureds, white individuals tended to be less likely to view their general health status as excellent. This type of behaviour may be interpreted as characterising the white population group as conservative in reporting their general health status rather than interpreting this outcome at face value (more African and coloured adults have an excellent general health status relative to white adults). Overall the coloured population group self-reports the

poorest perceived health status with more than 20% of coloured adults reporting between a poor to fair general health status.

Table B-0-5: Perceived health status by race 2014/2015 (%)

Perceived health status	African	Coloured	Asian/Indian	White	Total
Excellent	28.19	26.42	33.16	26.87	28.07
Very good	26.87	25.66	36.17	33.77	27.58
Good	29.73	31.32	14.97	30.68	29.51
Fair	11.26	11.39	10.37	7.15	10.92
Poor	3.96	5.22	5.33	1.52	3.92
Total	100	100	100	100	100

Source: NIDS 2014/2015 (author's own calculations)

The results from 2014/2015 show very similar patterns in perceived health status to 2008 in terms of racial distribution. Coloureds still had the greatest proportion with a perceived health status between fair and poor. This is despite an improvement in their perceived health status as well as the proportion of Asian/Indians with a poor perceived health status exceeding that of coloureds. Caution must however be taken in making inferences about the Asian/Indians from this sample as the proportion of Asian/Indians are significantly small relative to the other population groups. The white population group was the only group in 2014/2015 to show a worsening in their perceived health status. A total of 0.59% and 2.16% more white adults in 2014/2015 indicated a poor and fair perceived health status respectively, relative to 2008. In addition, 2.59% fewer white adults indicated an excellent perceived health status in wave 4 relative to wave 1.

Table B-0-6: Perceived health status by gender for 2008 and 2014/2015(%)

Perceived health status	2008		2014/2015	
	Male	Female	Male	Female
Excellent	35.82	26.84	30.97	26.42
Very good	29.94	25.84	28.61	29.07
Good	21.17	26.29	29.02	30.05
Fair	9.15	13.30	8.27	10.89
Poor	3.92	7.73	3.13	3.57
Total	100	100	100	100

Source: NIDS 2008 and 2014/2015(author's own calculations)

Table B-0-3 above describes the perceived health status of individuals in terms of their gender in 2008 and 2014/2015. Relative to 2008, the perceived general health status of males converged. This can be seen in the decline of the proportion of males with an excellent, very good, poor and fair perceived health status, coupled with an increase in the proportion of males with a good perceived health status. Despite the overall improvement in the perceived health status of females from wave 1 to wave 4, it was clear that males had a greater perception of their general health status compared to females for both waves. In 2008 roughly 20% of females perceived their health status to be between "poor" and "fair". This is compared to roughly 14% of males in 2008 perceiving their general health status to be between "poor" and "fair".

Table B-0-7: Perceived health status by geographical area type for 2008 and 2014/2015 (%)

Perceived health status	2008	2014/2015	2008	2014/2015	2008	2014/2015
	Traditional	Traditional	Urban	Urban	Farms	Farms
Excellent	28.57	25.24	31.23	29.63	29.33	24.30
Very good	28.46	29.21	27.35	26.03	20.35	37.93
Good	22.03	29.39	24.82	30.13	31.15	22.55
Fair	13.75	11.92	10.87	10.49	12.66	10.64
Poor	7.18	4.25	5.73	3.72	6.51	4.68
Total	100	100	100	100	100	100

Source: NIDS 2008 and 2014/2015 (author's own calculations)

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Table B-0-4 above describes the perceived health status of adults in terms of their geographical area. People who reside in urban areas reported a higher perceived general health status relative to people who resided in traditional areas and farms. This finding was consistent in both wave 1 and 4. Interestingly, in wave 1 roughly 19% of people residing in farming areas reported a "poor" to "fair" perceived health status. In traditional areas, roughly 21% of people reported a "poor" to "fair" perceived health status. Traditional areas also reported a lower a proportion of people in an excellent perceived health status compared to farms in 2008 (28.57% vs 29.33% respectively). In 2014/2015 the findings are more mixed for farms relative to traditional areas. Both, however, did show a lower proportion of people with a "poor" and "fair" perceived health status relative to 2008.

Negative life events

Negative life events are important as they are part of the social determinants that may affect the health outcomes of individuals. A negative life event may have a psychological effect on an

individual and therefore may increase the likelihood of an individual to experience depressive symptomatology. We therefore examine the frequency of negative life events that an adult experiences within the prior 24 months in South Africa. Some depressive symptoms may be linked to experiencing a negative life event and perhaps not being able to cope with it.

Table 0-8: Frequency of negative life events in 2008 and 2014/2015

Negative life events	2008	2014/2015
0	94.11	88.25
1	5.59	11.08
2	0.3	0.65
3	0.01	0.02

Source: NIDS 2008 and 2014/2015 (author's own calculations)

Negative life events are crucial to assess as they directly have an influence on an individual's depressive symptomatology. The table above indicates the number of negative life events an individual experienced in the last 24 months. The negative life events that the study took into consideration included: "major crop failure occurring in the household", "widespread death/disease of livestock, theft, fire or destruction of property", and "any other negative life events". The reason that more negative life events were not taken into consideration was because this study sought to only take into account questions asked in both wave 1 and 4. The above indicates that the majority of the people did not experience a negative life event in 2008 (94.11%). This finding also held true in 2014/2015 with 88.25% of adults not experiencing a negative life event. The decline in the proportion of adults who had not experienced a negative life event from 2008 to 2014/2015 is evident. In addition, there was an increase in proportion of adults who experienced 1 negative life event from 5.59% to 11.08% from 2008 to 2014/2015. The proportion of adults who experienced two or three negative life events both increased slightly from 2008 to 2014/2015 by 0.35% and 0.01% respectively.

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Glossary

Definitions:

Mental Health: The World Health Organization (2014) defines mental health as a "state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community."

Mental Disorder: According to the Mental Health Connection of Tarrant county mental disorders are a health condition associated by modifications in thinking, mood or behavior.

Type of Mental Disorders:

Anxiety disorders: Chronic overwhelming feelings anxiousness or fear

Depression: Depression is more than a sad feeling, it has been linked to fatigue, an inability to concentrate, and having suicidal thoughts. (SADAG, n.d).

Bipolar: Bipolar disorder is defined by the Mental Health Connection of Tarrant County as a manic-depressive illness in which the individual has extreme mood swings. The illness causes changes in energy, mood and the ability to function.

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Substance Abuse: The Mental Health Connection of Tarrant County defines substance abuse as the inappropriate use and possible addiction to legal/illegal substances e.g. alcohol and drugs.

Schizophrenia (Psychotic disorder): The condition is a psychotic illness that disrupts an individual's ability to think. The illness is associated with a loss of touch with reality and environment.

Eating disorders: Eating disorders are defined by the Mental Health Connection of Tarrant County as being associated with feelings of concern over weight/body shape. It can sometimes be characterised by overeating or not eating enough.

Obsessive-compulsive disorder (OCD): Recurring intrusive thoughts that are unwanted that compel people to do rituals (Anxiety And Depression Association of America, n.d)

Post-Traumatic stress disorder (PTSD): PTSD is defined by the Mental Health Connection of Tarrant County as a psychological reaction that occurs as a result of a traumatic event. Such reactions include flashbacks, anxiety, and recurring bad dreams.

Socioeconomic Status: Socioeconomic status may be conceptualized as the social class standing of an individual or group of people (American Psychological association). The three common measures of socioeconomic status are: Income, Occupation, and education.

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